

Third
Anniversary
Issue

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Antic[®]

The **ATARI[®]** Resource

MAY 1985 VOLUME 4, NUMBER 1

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Antic®

The **ATARI** Resource

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editorial

Erik Weber

Antic



Top row, left to right: Andrew Pope, Hun-uk Kim, Lorene Kazer, Diane Lindley, Doug Millson; Second row from top, left to right: Maria Chavez, Gary Yost, Michael Canale, Brenda Oliver, Maria Tapscott, James Capparelli; Second row from bottom, left to right: VJ Briggs, Jack Powell, Linda Tapscott, Charles Jackson; Bottom row, left to right: Les Torok, Steve Randall, Nat Friedland, Harvey Bernstein. Not pictured: Eve Gowdley, Patricia Foster, Monica Burrell.

With this issue of **Antic**, the magazine starts its fourth year of publication.

The early issues were put out from the kitchen table of a former NASA programmer who had founded ABACUS, the San Francisco Atari Users Group. And the magazine rocketed to

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EDITORIAL

continued from page 6

a 120-page monthly with over 100,000 circulation—almost before we had time to stop keeping our records on scraps of paper stuffed into shoeboxes.

In many ways, 1984 was Antic's most challenging year. The micro-computer shakeout hit the market hard. Suddenly many computer stores wouldn't accept Atari products and a number of our steadiest advertisers went out of business. Some of the best-established computer magazines went under during 1984. Frankly, there were computer business "experts" who wouldn't have been surprised to see Antic call it quits too. . .

But the Antic staff is just too innovative and dedicated to ever give in to a downturn. We simply tightened our belts and looked for more ways

to work smarter. And now we've come through stronger than ever—as the turnaround of the past few months vindicated all those who believed in the Atari as the best 8-bit personal computer ever made.

New subscriptions have been pouring into Antic at the rate of nearly 1,000 a week. More and more third-party manufacturers who'd turned their backs on Atari are now coming back to show their support in the pages of this magazine. Even more important, Antic has lived up to the pledge we made to our readers last autumn—to find new ways to fill the vacuum in Atari information and services. . .

You can now read full details of the latest Atari news just hours after it happens, in the ANTIC ONLINE edition on CompuServe. And in only a few short months, the Antic Arcade

catalog has become one of the most important outlets for top-quality Atari books and software—including many of the previously out-of-print APX software classics.

These are only two of the new services Antic began providing this year; there's also the national directory of authorized Atari service centers, the Worldwide Users Group Network (WUN). . . and more!

So the Antic Third Anniversary arrives right in the middle of our most productive and exciting period ever. Thanks for coming along with us. Antic will have even bigger and better surprises for you during the rest of 1985!

And you can bet that the best coverage of the new Atari XE and ST computer models will continue to be found right here in these pages!

...and we won't take it anymore!

Dear Antic

Attached is a copy of the letter I sent to Broderbund Software expressing my disappointment in their decision not to publish an Atari edition of *Championship Loderunner*.

I think all Atari owners should unite and start writing letters to software companies to let them know how many of us are out there.

Timothy F. Hitchings
Staten Island, NY

Mr. Timothy F. Hitchings is absolutely right. . . and Antic has received many letters similar to the one above. It's time for Atari owners to demand first-class citizenship in the personal computer software world!

Now is the time to take action, because there is no longer the slightest excuse for major software companies to avoid bringing out their hit products for the Atari.

Just about half a million Atari

800XLS were sold during the 1984 holiday season. In many stores, Atari 1050 disk drives moved out just as fast—as previous owners upgraded to disk.



Fahrenheit 451

Add this to nearly a million previously-sold compatible Atari computers and you have a vast user base that does not have to take second place anywhere in the personal computer market.

So when YOU see a piece of software you'd like to buy, and you learn it isn't being released for the Atari,

your next step should be to write a letter to the president of the software company explaining what a big mistake they are making.

You can usually find the company's address on the software package or on the advertisement for the product. You don't need to look up the name of the person who heads the company—just write PRESIDENT on the envelope above the company name and address. Feel free to enclose a photocopy of this editorial along with your letter, in order to add a second voice to your argument.

On my desk at Antic as I write this, there's a pile of superbly packaged color-graphics adventure software from Spinnaker—all for the Apple and Commodore computers.

Spinnaker's Terzium line (originally called Trillium) features graphic adventure software adapted from famous science fiction books including Ray Bradbury's *Fahrenheit 451*.

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THE BEAM MACHINE by Steve Robinson is an Award Winning Arcade game that will drive you crazy balancing a series of beams while trying to get all the beans to roll down, without touching, all the while avoiding strange creatures who drop in to steal the beans. It's addicting!
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DIGGERBONK, another Award Winning game by Steve Robinson, challenges you to find your way through a continuously scrolling maze while avoiding some really strange creatures. Along the way you will need to **Bomb** some of them, but watch out for the bombs.
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EDITORIAL
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Amazon

Arthur C. Clarke's *Rendezvous With Rama* and Michael Crichton's *Amazon*.

The Windham Classics line from Spinnaker presents interactive graphic software adaptations of some of the best-known children's books. In this series are *Swiss Family Robinson*, *Treasure Island*, *Alice In Wonderland* and *Below The Root*.

But at this writing, Spinnaker says it won't release any of these products for the Atari.

If this makes YOU a little angry, then it would be a good idea to write a letter to:

William H. Bowman
Spinnaker Software
One Kendall Square
Cambridge, MA 02139

Antic will continue to report on this situation until all important software companies stop short-changing Atari owners.

Please feel free to send Antic copies of your letters to software companies—and let us know about any responses you get from the companies. This will help us keep everybody informed about the latest victories and opposition in this ongoing struggle.

James Capparell

James Capparell
Publisher

MODIFICATIONS AND KUDOS FOR TYPO II

Congratulations on your error checking program, TYPO II. It is short, fast and a great help in accurately typing your listings.

Here are a couple of modifications. For those of us with BASIC XL or an auto-numbering program, typing in the line numbers is not considered a life enriching experience. The following changes let you step through each program line by typing an asterisk and [RETURN].

This causes each succeeding program line to be listed and automatically checked, making it possible to type the program with an auto-numbering routine, and then check it without ever typing in a line number.

Even if you don't use auto-numbering, these changes will make it a lot pleasanter for you to step through the lines of a previously typed program that you're modifying.

Line 32210 is changed to make the two-letter codes appear in white, as they do in the magazine:

```
HG 32025 K=PEEK(136)+PE
EK(137)*256
FM 32065 IF LINES="M" T
HEN GOSUB 32230:POSI
TION 2.4:LIST B:POKE
764.12:GOTO 32060
FY 32210 POSITION 0.16:
? CHR$(HCODE+128):CH
R$(LCODE+128)
EI 32230 B=PEEK(K)+PEEK
(K+1)*256:IF B=32000
THEN POP:GOTO B
FA 32240 K=K+PEEK(K+2):
RETURN
```

Patrick Dell'Era
Fairfax, CA

HELP FOR PROGRAMS

How can I incorporate the "help" key on my Atari into my utility programs?

Greg Lykes
Rosemead, CA

To clear the HELP key, POKE 732,0. To read that key, PEEK(732). A 17 represents the HELP key, an 81 represents SHIFT-HELP, and a 145 means CONTROL-HELP.
—ANTIC ED

TRAK REPAIRS

When my Trak disk drive went on the blink, I was somewhat upset to find that the company had gone out of business. But after a call to Computer Palace in Oregon—where I bought my drive through an Antic mail-order ad—I found I could get my Trak repaired by Electronic Connexion, 424 E. Stroop Road, Kettering, Ohio 45429. You can phone them between 11-3 eastern time at (513) 294-0212.

Please print this information in your great magazine as a service to other Trak owners.

William R. Goslin
Grand Isle, LA

BEATING THOSE FOOTBALL BLUES

A February, 1985 I/O letter asked about football handicapping programs. Several football statistical and prediction programs can be found in "BASIC Betting: the Micro-computer Edge," by James Jasper (\$9.95, St. Martin's Press, NY). It covers baseball, basketball, football, and horse racing. It was intended for the Apple originally, but it should be possible to rewrite these programs for the Atari.

I. Allen Hummer
Fayetteville, PA

SEARS MONITOR GHOST

When Antic reviewed the Sears \$349.99 Performance TV/Monitor in our December 1985 Buyer's Guide, we wrote that it had a distracting color ghost when used as an Atari monitor. At the time, local Sears spokesmen assured us that the problem was a unique glitch in the unit we had borrowed for review.

As a result of monitoring the ComputerServe Atari SIG, Antic has now discovered that the problem is far more widespread. One electronically oriented SIG member wrote that when he looked inside his Sears TV/Monitor he felt that its composite video mode circuitry (needed by the Atari) seemed like a quick add-on to what was essentially an RGB monitor intended for IBM-type computers. —ANTIC ED

i/o board

WRONG NUMBER

One of the BBS numbers Antic downloaded from the Boise Users' Group and reprinted unchanged in the February 1985 issue was incorrect. Please do NOT call the (601) 388-3940 number in Mississippi—it does not belong to a bulletin board. —ANTIC ED

JOYSTICK SPRAYPAINTER

I found "Spraypainter" (Antic, October, 1984) a little slow, so I converted it to AC-TION! and installed an on/off routine with the joystick to make it more usable. Here it is:

```
BYTE W.5.1.1.1.
div=(25).
ofs=(5)
CARD X.1

PROC Init()
Graphics=(8+16)
SetColor(2,0,0) color=1
Plot(100,100)
x=100 y=100
RETURN

PROC Joystick()
s=stick(0)
IF s<0 AND x<15
THEN x=x-1 FI
IF s>0 AND s<15 AND x>6
THEN x=x+1 FI
IF (s/4)*4=s-1 AND y<105
THEN y=y+1 FI
IF (s/2)*2=s AND y>6
THEN y=y-1 FI
IF stick(0)>0 THEN
Plot(x,y) color=0
Plot(x,y) color=1
RETURN
FI
FOR i=1 to 4
00
x1=x+peek(53770)/div-ofs
y1=y+peek(53770)/div-ofs
Plot(x1,y1)
00
RETURN

PROC Spray()
Init()
00
Joystick()
00
RETURN
```

William Bennett
San Antonio, TX

EXPANDED CPU? NO.

Is it possible to put a CPU expander bus into my 1200XL?

Greg McAllister
Winnipeg, MB

We checked with Bill Wilkinson, who tells us that putting a bus expander on the 1200XL is out of the question for all but the most experienced electronics technician. Even if you could, it wouldn't be compatible with any other model without some very expensive conversion hardware and difficult-to-write software, says Bill, adding "Forget it." —ANTIC ED

TWO-FACED FLOPPIES

Can you notch a single-sided disk and use the other side? If so, will it cause any harm?

Raymond Moody
Fort Ord, CA

I. Yes . . . Notching a disk is easy—you can just use a regular hole punch. To be sure of putting the notch in the right spot, hold an already-notched disk behind the disk you're punching.

2. Possibly . . . You run a slight risk in using the floppy's flip side. A disk drive's read/write head presses the bottom of a disk against a felt pad. Pieces of dirt or metal could get stuck in the pad and scratch the "A" side of your disk if you're recording on the second side. However, at Antic we routinely use both sides of disks all the time and haven't lost any files yet. It's up to you if you're willing to take even a tiny risk with your disk data.

—ANTIC ED

CHIPS, CHIPS, EVERYWHERE CHIPS

What can you tell me about the Western Design Center's OXI-CMOS W65SC802 CPU or related chips? It is supposedly a 16-bit processor compatible with existing 6502 applications. The chip is comparable, pin for pin, with the 6502 used in Atari.

Mike Bartledge
El Segundo, CA

We checked with Charles Cherry, of Technical Support in Daly City, who sup-

plied the following information and short history of the Atari 6502 —ANTIC ED

The Atari 400 and 800 use the 6502B, a faster version of the original 6502 microprocessor. The 600XL and 800XL use the 6502C, a substantially different chip that incorporates support functions that, in the days of the 6502A, were contained on separate chips. A further consolidation of support chips led to the 6510, which may be used in the new XE computers.

There are three other interesting chips in the 6502 family.

The 65C02 (a plug-in replacement in the Atari 400 and 800) offers the increased reliability, decreased power consumption and heat generation, and better heat immunity of CMOS. It also has new machine language instructions and addressing modes, which are supported by the MAC/65 assembler cartridge from OSS.

The other two chips are 8-bit and 16-bit processors based on the 6502. The 8-bit W65SC802 has new instructions and addressing modes. It appears to have the same new capabilities as the 65C02, and may work with MAC/65.

The 16-bit W65SC816 chip probably won't work with the Atari because of the pin arrangement.

help!

ADVENT X-5 AGAIN

We have found that even with the missing line (8020 RUN) included, readers are having problems with ADVENT X-5. Take a close look at line 1005: the third inverse P in the second line is lower-case, and the thirteenth character in the second line (just before the inverse f) is a CTRL-B.

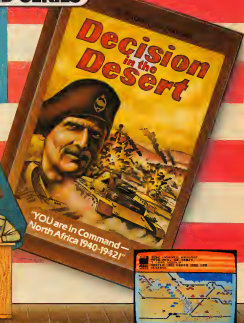
—ANTIC ED

PENCILS ON DISK

Antic omitted to put "Pencils" onto the March disk, as we had promised on the microscreens pages. So the nifty GTIA image by Gregg Twiers will appear on the disk for the next issue. —ANTIC ED

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TSCOPE AUTODIALER

Automatic log-on program

by CHARLES JACKSON, Antic Program Editor

TSCOPE, by Joe Miller, is a well-known public domain program. It enables owners of the Atari 1030 or 835 modem—or most modems that work with the Atari 850 interface—to upload and download either binary or ASCII files on the CompuServe SIG Atari.

(TSCOPE is available on the Antic 1030/835 Telecommunications Disk, PD025 in the Antic Catalog.—ANTIC ED)

TSCOPE Autodialer is a fast and foolproof way to log onto CompuServe automatically. You just boot your TSCOPE disk and sit back while TSCOPE Autodialer types in your CompuServe phone number, your User ID and your password.

When TSCOPE starts, it looks for a file named AUTODIAL.SYS which contains a simple set of log-on instructions. AUTODIAL.SYS is optional and doesn't come included with most versions of the TSCOPE program. You must create your own.

GETTING STARTED

TSCOPE Autodialer will create an

A short, automatic log-on program for TSCOPE, the popular public domain telecommunications program. It will run on any Atari computer with a disk drive. Works with any TSCOPE compatible modem, including the Atari 1030 & 835.

AUTODIAL.SYS file for you. Type in Listing 1, checking it with TYPO II, and SAVE a copy to disk.

When you RUN the program, it will ask you for the phone number to dial, your access number (User ID), and your password. When you've entered this information, place your TSCOPE disk into the drive and press [START] to write the file. If you haven't already renamed your TSCOPE.OBJ file AUTORUN.SYS, the program will remind you to do so.

TSCOPE Autodialer creates an AUTODIAL.SYS file which might look something like:

```
555-1234
^C]:98765.4321
]:SECRET.PASSWORD
```

The first line contains the phone number to be dialed. Hyphens, parentheses and blank spaces are ignored by TSCOPE.

The second line begins with ^C—the code for [CONTROL] [C]. The right-bracket symbol "]" after the "C" stands for "wait". This tells the autodialer to wait for a prompt before continuing.

With our sample AUTODIAL.SYS file, TSCOPE would dial 555-1234 (ignoring the hyphen) and wait for a connection. Then your autodialer would issue a [CONTROL] [C] code and wait for the colon [:] at the end of the User ID: prompt. When the autodialer receives this colon, it enters your access number.

The colon on the last line of the AUTODIAL.SYS file tells the autodialer to wait for the next colon—the one at the end of the Password: prompt. It then enters your password.

continued on next page

MAKING CHANGES

There are many ways to modify your autodialer. If you wanted to automatically visit the ANTIC ONLINE service, for instance, you would add this line to your AUTODIAL.SYS file:

A)GO ANTIC

This instruction tells the autodialer to wait for an exclamation point prompt, then type the GO ANTIC command.

PASSWORD PROTECTION

Though TSCOPE Autodialer is the quickest way to log-on to CompuServe, it lacks some security. Anyone who can load a disk and turn on a modem could gain access to your CompuServe account. So always keep your autodialing TSCOPE disk in a safe place.

Listing on page 80

In April, type GO ANTIC as soon as you log onto CompuServe. You'll be able to read Antic's immediate on-the-spot coverage of Atari news from the 1985 West Coast Computer Faire, which took place from March 30 to April 2.

ANTIC ONLINE will also give you a full preview of the stories and programs in the next Antic Magazine—the June Computer Arts issue.

You'll even see a major excerpt from the upcoming issue's featured article. This time it's a look at two breakthrough music products—an Atari MIDI controller that emulates a 16-track digital recording studio, and a real-time music generator that

lets you improvise four-part compositions at the Atari keyboard.

Each month ANTIC ONLINE brings you the very latest Atari information long before it can appear in any magazine. From most areas there are no long distance charges for this service, so it does not cost you anything more than the standard CompuServe online time charge.

The ANTIC ONLINE special bulletins may be downloaded for reprinting in newsletters of users groups affiliated with the Antic Worldwide Users Network. Officers of Atari users groups may write to Antic for details about WUN affiliation.



Next Month in

Antic

The ATARI Resource

JUNE

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- to help you, system status is displayed right on the screen

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ANTIC BOOKSHELF

Reviewed by CHARLES JACKSON and MICHAEL CIRAOLO

Book of Adventure Games

by Kim Schuette

\$19.95

344 pages, paperback



Cheating is expensive. In this case, it will cost you about \$20 to obtain maps and cheat sheets for most existing adventure games.

Of course, it might well be worth \$20 to avoid those sleepless hours, as you pull out your hair and wonder how to get past that bear or enter those massive doors in your favorite adventure game.

Whether you want to use such a cheat book is your business. But if you do, you'll find this an excellent guide.

Maps and solutions reflect actual gaming experience and include appropriate editorial comments. The maps are well drawn and clearly presented. However, in our random sampling of game clues, some maps contained minor, but frustrating inaccuracies. Clues are provided as needed, in the form of numbered notes. These clues are in a separate section at the end of the book, so it is possible to just peek at that one answer you absolutely cannot figure out.

Each game also comes with publisher information, suggested retail price, description and brief review, necessary menus and character charts.

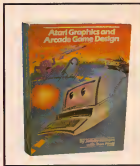
The Book of Adventure Games covers over 75 titles, most of which were designed for the Apple. But 42 are available for the Atari, including all Infocons except the very latest, the Ultima series, the Adventure International catalog, *Gruds in Space*, *Ulysses*, *Wizard and the Princess*, and most other favorites.

This book is published by Arrays, Inc., 11223 South Hindry Avenue, Los Angeles, CA 90045.

Atari Graphics & Arcade Game Design

by Jeffrey Stanton with Dan Pinal
\$16.95

479 pages, paperback



Atari Graphics & Arcade Game Design was written for intermediate BASIC programmers ready to master the Atari at a higher level.

This is not a book for beginners who think a "Sprite" is something that goes well with a hot dog and a "redefined character" is a fellow who's had a spiritual experience.

The early chapters deal with display lists, character set graphics and ANTIC and GTIA graphics modes. Several short BASIC program listings are included to illustrate key points in the text.

In a gentle introduction to Assembly Language, a BASIC version of a "Breakout" game is taken apart and its subroutines are explained. Ensuing chapters compare each subroutine to equivalent assembly language macros. By the time you're through, you should be a lot closer to designing and writing your own machine language arcade games.

Although the assembler listings are written in Synassembler, the book has a comparison table to help you translate the Synassembler code to Atari Assembler Editor, MAC/65, Atari Macro Assembler or Eastern House.

(This book is available by mail from the Antic Catalog bound into this issue of the magazine.)

Atari Color Graphics

by Joseph W. Collins

\$12.95

202 pages paperbound



Atari Color Graphics: A Beginner's Workbook is a useful introduction to 14 Atari BASIC graphics modes. These include the three GTIA modes and two modes (Graphics 14 and Graphics 15) unique to XL computers.

If you're a beginning programmer, you'll want to keep your BASIC reference manual close at hand, since the workbook only describes BASIC graphics commands.

Each workbook chapter introduces a different style of computer graphics, including high, low and medium resolution modes; single and multi-color modes; the GTIA modes and three text modes.

The book contains many illustrations and dozens of short type-in programs that demonstrate key points in each chapter. New BASIC programmers ready to add interesting graphics routines to their programs should start with this book.

(This book is available by mail from the Antic Catalog bound into this issue of the magazine.)

Both graphics books reviewed here are published by Arrays, Inc./The Book Division, 11223 South Hindry Avenue, Los Angeles, CA 90045.

1, 2, 3, My Computer & Me! A Logo Funbook For Kids (Atari version)

by Jim Muller and the staff of the Young Peoples' Logo Association.

\$12.95

111 pages paperbound



Here is one of the finest Logo workbooks available for children. Armed with this book, young people unfamiliar with Logo will quickly have turtles dancing on their screen. Later chapters explore recursion, music, writing and editing procedures and using the Logo shape editor.

Children will enjoy this lively and instructive book. It is filled with dozens of colorful and enjoyable Logo procedures to try. Parents and teachers will appreciate 1, 2, 3 because every lesson encourages children to use experimentation, imagination and intuition to solve programming puzzles.

Logo Fun

by Pat Parker and Teresa Kennedy.

\$5.95

112 pages paperbound



This Logo tutorial simultaneously describes versions of the language for Atari, Texas Instruments, and two Apple variants. Consequently, you must be familiar with the Atari Logo user's guide before you read Logo Fun. Without this knowledge, debugging your Logo procedures soon becomes a frustrating nightmare.

Logo Fun contains a wide assortment of tiny procedures which draw attractive patterns on the screen. Several of these designs are presented in an eight-page color section in the middle of the book.

The authors invite you to use their book like an encyclopedia—to "flip back and forth, or check the index to find what you need." Unfortunately there is no index, and "flipping back and forth" soon becomes a time-consuming chore.

Both Logo books reviewed above are from Reston Publishing Company, 11480 Sunset Hills Road, Reston, VA 22090. (800) 336-0538.

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All games are on 48K disk except for 50 MISSION CRUSH (40K disk).

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the Hitchhiker's Guide to the Galaxy



Reviewed by JACK POWELL and MICHAEL CIRAOLO

We know how to get the Babel Fish. But don't ask us. We won't tell you. And Don't Panic, the clue is right there in the game.

We're talking about Infocom's new text adventure, *The Hitchhiker's Guide to the Galaxy*, based upon the first of that insanely funny series of books by British author and ex-bodyguard Douglas Adams. If you haven't read the book, please do. It will definitely help you in the game.

For those culturally deprived members of our audience, the game generally follows the cult-classic book (although Adams did write extensive (and very funny) new material for the adventure).

The excitement opens as you awake to a hangover in your bed in Cottingham, England. Playing the part of Arthur Dent, hapless earthling, you must quickly come to terms with existence . . .

Your house is about to be demolished to make way for a highway bypass. No matter, really. The earth is about to be destroyed by a Vogan Constructor Fleet to make way for a hyperspace bypass.

But wait! There's more! Infocom takes YOU, the feckless adventurer, to

worlds beyond imagination: "Welfare planets ruled by dry-cleaning establishments, where even the most basic of human necessities are provided a day late and with too much starch." And so on.

Face it—this is not your run-of-the-mill text adventure. If you're going to survive, you'll need your trusty Hitchhikers Guide (built into the game) and a towel! Be warned: Despite its "standard level" rating, this is the most challenging game we've seen from Infocom. (Have YOU gotten the Babel Fish or bested the Ravenous Bug-Blatter Beast of Traal?)

The puzzles are tough, but they follow a certain capricious, twisted internal logic. As we played, we encountered repeated dead ends. When we finally discovered the answers, we found the solution was logical and often accompanied by previous clues.

In fact, if you stumble around enough in certain problem areas, the computer will eventually throw in a hint.

The best way to understand this British whimsy is to read and enjoy Adams' books or possibly the works of Lewis Carroll.


This extraordinary game is the result of an unusual partnership.

Adams, who is a long-time fan of Infocom games, approached the company with the possibility of doing a game based on his book. He teamed up with Steven Meretzky, the award-winning author of Infocom's *Sorcerer* and *Planetfall*.

The result is a step forward from Infocom's safe, established approach to game design. It is a break from the tradition of event-specific mysteries and plotless underground dungeons. The style of writing is distinct and tangible—really the first stylistic departure since the classic *Zork* trilogy.

Tips for novices: play the game with a grizzled Infocom adventurer OR a crazed Hitchhikers fan.

And now, we now have a confession to make. We had planned on getting this review into print at least a month ago, but we hoped to finish the game first. Alas, we simply haven't been able to get past the Screening Door. So, if anyone out there has a clue. . .

This text adventure is available from Infocom, Inc., 55 Wheeler Street, Cambridge, MA 02138, phone (617) 492-1031. \$34.95, 48K-disk. 



by CHARLES
CHERRY

GEM of ATARI

More than pretty icons!

When Jack Tramiel announced that the new 16-bit STs would use the GEM operating environment, he joined Atari to one of the most innovative lines of research in computer history.

During the 1970s a group of digital visionaries gathered at Xerox's Palo Alto Research Center (PARC) to explore how computers should relate to people. They wanted to teach "people literacy" to computers instead of computer literacy to people.

It is already hard to remember how difficult it used to be to operate computers. You literally needed a computer science degree to use them. But video screens and electronic key-

boards replaced punch cards and teletypewriters in the '70s. And in those new video terminals, the PARC dreamers saw the future. . . . A video screen could show anything, and a picture could replace a thousand words.

IDEA PICTURES

The icon was born, a picture of an idea. Like international traffic signs, an icon can communicate more quickly and more vividly than words. A file cabinet represents a database, a piece of paper stands for a word processor, a disk means DOS. Since icons can be small and simple, many can be put on the screen without confusion. You can see all of the available options

simultaneously. All you need to do is select among them.

But how do you select an icon? The gang at PARC tried everything, keyboards, touch tablets, light pens, joysticks and finally a mouse. The mouse was their choice—simple, natural and intuitive.

There was one more element to invent, a visual metaphor for the way you use a program. As you do various things in a program the entire screen keeps changing. For instance, if you want to change the skill level of the game you are playing, the playfield disappears and the option screen appears.

But the PARC researchers thought this was wrong. You should not have to jump around in a program, the program should come to you. Hence the idea of windows. A portion of the playfield would open up and reveal enough information for you to make your choice, while the rest of the game is still visible behind the choices.

PARC TO MAC

These visions led Xerox to build the dream machine called Star. It was wonderful and elegant and over \$20,000—much too expensive for the 1981 market.

Steve Jobs of Apple got access to look around inside PARC and a year later Apple's Lisa came out. Priced



GEM desktop display for the New Atari ST

around \$10,000, it did not sell very well either. But it attracted lots of attention. Then Apple tried again with the Macintosh, which was originally priced at \$2,495. The PARC vision was finally within reach of the general public.

In the above three computers, both software and hardware systems were custom designed as one complex unit. But underneath the spectacular screens were ordinary computers. The hardware had the same input and output requirements, the same memory management problems. The PARC graphics environment was simply an overlay—which in theory could work with any operating system on any computer.

The challenge of creating a single graphics environment overlay which would be compatible with many different computers was taken up by Digital Research, Inc. of Monterey,

continued on next page

California. DRI had developed the first microcomputer operating system, CP/M. Now they produced the Graphics Environment Manager, GEM.

Although it may well run on other operating systems in the future, GEM is currently available for IBM PC-DOS, and for the closely related MS-DOS and Concurrent DOS.

GEM MEETS ATARI

GEM has now also been chosen for the upcoming Atari ST computers. It will work with the new TOS operating system, which is a close relative of DRI's CP/M.

In the Atari STs, the GEM overlay, the TOS operating system, and the device drivers including hard disk, floppy disk, Centronics parallel, and RS232C serial are all to be contained in 192K of ROM. That means when you turn on your ST it is ready to work immediately and none of your RAM has disappeared.

GEM does more than make computers easy to understand and use, with flashy icons and drop-down menus. It also supports multi-tasking. That means that you can run several programs at the same time and easily pass information between them. It is what we all thought computers could do before we got one.

GEM's powerful graphic capabilities are available to application software, so terrific drawing programs and spectacular games should be the order of the day. In the multiple windows you could run your word processor and your spreadsheet at the same time. Programs that we never dreamed possible will be!

INSIDE GEM

GEM works by setting up an imaginary all-purpose input-output graphics device, called a Virtual Device Interface (VDI). All graphics I/O is sent through it. This will sound familiar to programmers who have used the Atari CIO. The GEM VDI and IBM both follow the emerging American National Standards Institute (ANSI) standard of a memory location grid 32K wide and 32K high.

Real-world devices, such as monitor screens, touch tablets, graphics printers, plotters, and mice are usually much smaller. The ANSI standard requires the necessary scaling be done by the application program or the device handler (they call them device drivers), guaranteeing compatibility over a wide variety of actual devices. GEM calls this the Normalized Device Coordinates mode.

GEM supports another VDI mode called Raster Coordinates (RC). This allows you to map the actual device coordinates over a portion of the VDI. It was designed with monitor screens in mind and permits addressing pixels directly, just like bit-mapped graphics. RC allows multiple screens to be created within the 32K by 32K VDI grid. You can then switch between them.

The GEM VDI supports over 50 functions. These are like the XIO functions and the AUX1 and AUX2 bytes in the Atari CIO. They handle setup of devices with defaults, graphic primitives like lines, polygons, ellipses, arcs, and others. They control color registers, line style, character fonts and cursor forms. They also support bit block transfers (which per-

form logic operations on bytes before moving them) and access to special device capabilities.

BUILT-IN LIBRARY

GEM includes a package of subroutine libraries in the Application Environment Services (AES). These libraries handle the program's interface with GEM, taking care of icon manipulation, drop-down menus, windowing, information transfer between applications, and a host of other details. This makes the GEM magic much easier to program. Digital Research also has just finished a GEM Programmer's Toolkit manual to aid in commercial program development.

Because GEM runs on many machines, most notably the IBM, programs are easily moved between operating systems. Consequently, it is believed that high quality IBM programs running under GEM will soon be available on the Atari. But this can work the other way, too. Atari programmers will be able to sell their creations in the IBM market. Finally, Atari owners will get some practical large-scale business programs and IBM owners will get some decent games.

The user interface in computers has come a long way in a very short time. We Atari users have had one of the best all along. GEM will be another giant leap forward.

Charles Cherry is a theatre technician who uses his Atari to generate images for industrial slide shows, as a moving message center, as a teleprompter and as a business machine.



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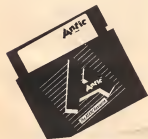
You'll love the hi-tech design of the 1030 modem. It'll look great next to your computer and peripherals! And hidden inside is the most sophisticated circuitry on the market. This means 100% accurate file transmissions the first time—even over voice-grade phone lines anywhere in the country. Your 1030 modem is built almost to military specs—guaranteed to have less than 1 bit error out of every 100,000 bits—the lowest in the industry.

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Paperclip

by MICHAEL CIRIOLO and NAT FRIEDLAND
of the Antic Staff

In case you weren't aware of this, it's a matter of honor at Antic to use only Atari computers in our office. And since we are a publication, word processing software is used around here a lot.

We've noticed there are two schools of thought about word processing software for the Atari. Atari users who haven't had experience with other makes of computer are reasonably satisfied. But other Atari users who've had some exposure to machines with more of a "business computer" image unfortunately know better. . .

Antic had been using IJK's **Letter Perfect** as our in-house word processor—although without any great enthusiasm for it.

We'd found Letter Perfect to be rather more powerful and fuller-featured than **AtariWriter** or **Text Wizard**, the only other established "serious" Atari WP software.

Probably just as important to us was that only Letter Perfect would work with the 80-column cards we had at a couple of workstations. This advantage tended to make up for the program's files requiring a tedious conversion process anytime we needed to transfer in or out of standard Atari DOS.

ENTER PAPERCLIP

But the day our beta test copy of **PaperClip** arrived from Batteries Included in Toronto, the Antic Editorial Department cheerfully retired our Letter Perfect.

Every once in a while, a piece of software or hardware shows up here that is so clearly superior in its category to anything else available for the Atari that Antic starts using it in-house immediately. The previous example of this was "DISKIO" (January, 1985) that at once began replacing DUPSYS on our program disks.

Simply, PaperClip is by far the best word processor ever available for the Atari. It boasts a line-up of advanced features that would be hard to match on even the biggest-name word processing software costing \$300 or more.

PaperClip makes your Atari the word processing equal of just about any computer on the market. Yet it is not hard to learn and sells for only \$59.95.

Some nuts and bolts information: PaperClip runs on all Atari computers with 48K. It comes on a disk that you can back up. But the program is protected by a special key that plugs into joystick port 2.

A few technical notes: As we've

previously reported, it is based on the ACTION! editor and written in 100% machine language, so it's *fast*. (It's really quite different from the PaperClip version written for the Commodore 64.) The preliminary draft of the manual that we've got is pretty clearly written. And the screen gives you big, sharp letters with true descenders, because the program uses ANTIC Mode 3 and predefined characters.

UNIQUE FEATURES

To justify our enthusiasm for PaperClip, here are some of its most distinctive features:

- **DUAL WINDOWS**—You can display two text files onscreen at the same time. And you can easily move blocks of text between file windows.
- **ONE-KEY MACROS**—You can easily set up for one keytouch while pressing [START] to type in an entire word, phrase or paragraph that you regularly use in your writing.
- **PREVIEW MODE**—PaperClip is easier to use in 40-column screen format than any word processor we've ever seen. In the preview

clip

State-of-the-art Atari word processing!

mode you can scroll horizontally or vertically to see exactly how your words will fit on the page. Even in the normal mode, a diamond mark at the end of each line shows exactly where the word wrap is. (And PaperClip will support Batteries Included forthcoming plug-in 80-column card, which is due later this spring.)

- **HIGH-POWER COMMANDS**—There's actually no flipping between mode menus. Saving and loading files, disk formatting, editing, text entry, disk directories and help menus are all available from the same screen with the touch of very few keys. Some really unique and useful commands include automatic save, transposing letters or words, or converting capital letters and lower-case letters back and forth.

MINOR QUIBBLES

It is not the normal thing for a computer magazine to be able to review beta test software prior to its finalization for market. However, Batteries Included unconditionally agreed to let us rush a review of our beta copy

of this significant Atari word processor.

The Antic editors did find some minor problems with PaperClip. But Batteries Included promised us that most of the bugs had already been fixed in the final version of the program that goes on sale in April.

Our biggest concern was the size of the memory buffer. The latest version we worked with had only enough free memory to handle a single-spaced document (slightly over six pages long for 12-14 pages double-spaced).

Batteries Included said the final version would hold files of about 20 pages double-spaced. The buffer in XL models will contain about 28K memory, 24K in the 800 model.

To set the print format commands for boldface, underline and italics, you must specify whether it is the beginning or the end of the formatted section. We found this cumbersome, especially when so many of the other commands are so convenient.

There are still a few things that Letter Perfect does which we wish PaperClip would also do. For example PaperClip does not have a command deleting an entire word, forward or backward.

Although this word processor

comes with an unprecedented number of options, for some reason it does not let you turn off the keyclick in the 800 models, which have no independent volume control.

EASY POWER

Of course, in PaperClip you will also find all the standard features you'd expect from a competitive word processor today. There's global search and replace, underlining, italics, boldface, headers and footers, onscreen help files, pitch control, page length setting, nearly 30 different printer drivers plus a configuration menu, and on and on...

Yet for all the power it offers, PaperClip is surprisingly easy to learn. This is unusual, because the more powerful editors are usually harder to master. But PaperClip is virtually as easy to use as **Bank Street Writer** so there is no reason why it shouldn't be your first word processor.

Many of the editing functions are accomplished by holding down the [CONTROL] and [SHIFT] keys together plus a third key. With very little practice, this becomes second nature. And it also makes for an efficient command structure.

continued on next page

For instance, [DELETE] removes the character to the left of the cursor, [CONTROL] [DELETE] removes the character beneath the cursor [SHIFT] [DELETE] removes the entire cursor line. [CONTROL] [SHIFT] [DELETE] gives you a choice of deleting to the [E]nd or [T]op of the file.

AND STILL MORE...

This review is based on the experiences of the four *Antic* editors during this first first month when we prepared an issue of the magazine entirely with PaperClip.

We wanted to tell you about this product as soon as possible. But the fact is that PaperClip even has a lot of other powerful features we simply haven't had a chance to work with yet. Plus there's one or two we've been told about that are still in development.

So at this time all we can do is list the most important extra features (We don't even have room for *all* of them) and promise to cover these extras in a later article or articles.

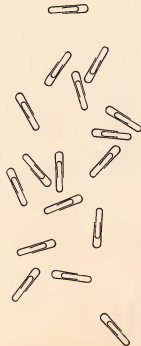
- TWO COLUMN PRINTOUT
- BUILT-IN MATH CALCULATOR
- MAILMERGE WITH SYNFILE+
—Both programs are by the same authors, Steve Ahlstrom and Dan Moore, although SYNFILE+ was written in FORTH.
- MULTIPLE DISK FILE GLOBAL SEARCH—Up to 6 simultaneous search and replace operations throughout all linked disk files in as many as 4 separate drives. Truly amazing.
- ATARIWRITER PAPERCLIP FILE CONVERSION—*Antic* Contributing Editor Jerry White is writing this one.
- MIXED TEXT/GRAPHICS SCREEN DUMP—This integrated screen dump will enable you to mix text and high-resolution Atari graphics (modes 7.5 and 8) on a single printed page. It's compatible with Micro Illustrator and most other graphics software files.

OUR RECOMMENDATION

To sum up, if you do any extensive amount of Atari word processing—whether it be as a student, business person or professional—you should get PaperClip right away. If it's not in your local stores yet, buy it by mail from Batteries Included. (You don't need PaperClip if you only write occasional short letters at home. For that minimal level of use you should probably look first at Batteries Included's \$49.95 *Home-Pak* which was reviewed in the March, 1985 *Antic*.)

PAPERCLIP

Batteries Included
186 Queen St. West
Toronto, Ontario
M5V 1Z1 Canada
(416) 881-9941



TECH TIPS

From the
ABCs of Atari Computers

by David Mentley

SPEAKER — The console SPEAKER is controlled by register \$D01F (53279) decimal. This is the same location as for the console keys. To start the SPEAKER clicking, POKE in a number between 0 and 7. The continuous loop

1 POKE 53279,0: GOTO 1
will generate a continuous humming noise. In the XL series, the SPEAKER noise is routed to the television SPEAKER.

Infrequently Used BASIC Commands

STR\$ — In BASIC, the STR\$ command converts a number or numeric variable to a STRING. You will also need a string variable name to place the string into if you want to use it somewhere else ONE23\$ = STR\$(123) will assign the string "123" to the string variable ONE23\$.

VAL — In BASIC, VAL performs the opposite function as STR\$. VAL converts a string which is made of numeric characters to a numerical variable or value X = VAL(Y\$) will assign the value of 123 to the variable X if Y\$ were a string called "123". If Y\$ is an alphabetic character, an error will result.



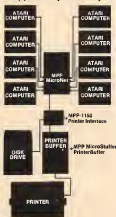
From *ABCs of Atari Computers* by David Mentley (available through the *Antic* Catalog in this issue). Reprinted by permission of Datamost, Inc.

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Environment

Music Synthesizer Control



MEET THE 68000

*Will the ST
16-bit chip
kill BASIC
and
assembler?*

by JACK POWELL
Antic Technical Editor

There's a new kid on the block. He's bigger, brighter, more sophisticated, and a whole lot faster. His name is 68000 and he speaks in new tongues. There are those who say he could be death to assembly language and BASIC.

The new Atari ST computers will contain the Motorola MC68000 microprocessor chip. Introduced in 1979, it was the first 16-bit microprocessor to have 32-bit internal architecture with 16-byte, non-segmented direct memory addressing, which means you can potentially access 16,777,216 bytes. That's over 5,500 pages of single-spaced typing. For programmers used to Atari's old 6502 chip, it's a whole new ball game.

BASIC BABEL

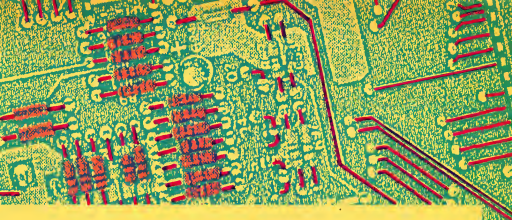
Most Atari programmers started with the BASIC that came with their machines. Many grew tired of its limitations, and evolved to the powerful, highly precise world of machine language.

Some argue this pattern will change with the new STs. Jeffrey Gortatowsky, writing on the Compuserve Atari SIG, says the pattern of this evolution was caused by the design and memory limitations of the 6502. If you want to write effective speedy software for a computer that has only 64K memory available, you must use assembly language. The code produced by high-level language takes up too much memory and, on the 6502, is usually not fast enough.

HIGH-LEVEL FUTURE

Gortatowsky then argues that, in the 68000, we will see the beginnings of change. The chip architecture is so flexible and fast, and the addressable memory so vast, that high-level language will become the practical choice of software manufacturers because time-consuming, costly assembly language will no longer be necessary. In addition, private owners may find that any form of BASIC which takes advantage of this chip's power is going to be cumbersome and difficult.

This theory is echoed in the fine reference book, *68000 Assembly Language Programming*, by Kane, Hawkins



& Leventhal (Osborne/McGraw-Hill, Berkeley, CA, 1981). "We expect the future will favor high-level languages."

As chips and hardware become cheaper and more powerful, the theory goes, the cost of programming labor is rising. This helps explain the shift to efficient high-level languages for program development. These languages can also permit standardization of software development between machines.

A case can also be made that successful research in high-level structured languages is lagging behind hardware breakthroughs—which means that dramatic improvements in features such as ease of use are somewhat overdue and might be expected to happen reasonably soon.

Until then, it is not surprising that professional program developers are specifically being told by Atari to use C or Pascal on the STs.

There are two forms of C currently available for the Atari. **Deep Blue C**, which can be ordered from the Antic catalog, and **C/65** which you can get from Optimized Systems Software. Because of the Atari computers' current memory limitations, neither of these C versions are full implementations of the language. They should, however, serve as good training for those who wish to learn C.

The new **ACTION!** language, also from O.S.S. is a cross between C and Pascal. It's fun to program with and would also be an excellent training ground for those interested in learning structured programming.

In the computer world outside Atari, C is rapidly becoming more and more popular among home programmers. Does this mean BASIC is on the ropes? Not really.

A choice of BASIC or Logo—in versions designed by Digital Research who created the GEM operating environment used by the ST—will be bundled with the first ST machines. And there is such an established, wide base of BASIC programmers, it's doubtful the language will disappear.

New BASICs are likely to appear which will take advantage of extra memory and all sorts of easily-used new commands will be added. The original structure of the language, however, probably will remain the same.

MEMORY LIMITATIONS

And what about assembly language? We think memory-efficient AL will be as necessary and popular on the STs as on the earlier Ataris. Unlimited memory is not really available. The 68000 microprocessor may be *capable* of addressing 16 mega-bytes of memory, but, of the two announced ST models, the 130ST (\$399) will contain only 128K of RAM and the top-line 520ST (\$599) will have 512K.

On the IBM PC the highly touted Symphony, written in a high-level language, requires 340K just for starters. Framework, also written in a high-level language, will operate (barely) in 256K on the IBM PC—but its tutorial disk will not!

Atari says the new STs have non-expandable memory. We suspect it won't be long before some imaginative third-party manufacturer figures out a way to plug more memory into the "non-expandable" STs. But meanwhile if a software developer wants to market a program that will run on both ST models, assembly language may be the only viable solution.

HACKER'S PLEASURE

A consideration not taken into account in all this is the pure satisfaction that assembly language programmers get from programming at the nitty gritty level. We're no longer talking about the practical, economic business approach, but the home hacker who wants to roll up his sleeves and get to know every board, chip and register in that machine. He does not want to be limited by someone else's idea of what the processor can do. If he wants a high-level language, he *writes* a high-level language.

For those 6502 hackers, we offer the following preview to whet your ST appetite. And this is simply an hors d'oeuvre. Further details and definitions must be saved for later articles. If you can't wait, we recommend you pick up the previously mentioned **68000 Assembly Language Programming**, or **The 68000: Principles and Programming**, by Leo J. Scanlon, Howard W. Sams & Co., Inc.

continued on next page

68000 OVERVIEW

There are two operating modes in the 68000: User and Supervisor. Certain instructions in supervisor mode are not available in user mode. The supervisor mode is a protection against operator misuse, in sophisticated, multi-tasking systems. It should be interesting to see what Atari does with the supervisor mode.

Other niceties include built-in debugging aids, traps against illegal addressing and illegal instructions, a one-step trace mode, and seven levels of vectored interrupts. Most of these are only available from the supervisory mode.

DATA TYPES

Although the 68000 has a 16-bit data bus, meaning that 2 bytes of information can be accessed in one machine cycle, internally it can operate on five different types of data: bits, 4-bit binary coded decimal (BCD), 8-bit bytes (B), 16-bit words (W), and 32-bit long words (L). Because of this, byte data may be addressed at even or odd addresses, but words and long words must be addressed at even addresses. For example, three bytes in a row could fall at addresses \$0004, \$0005 and \$0006, three words at \$0004, \$0006, \$0008, and three long words at \$0004, \$0008, \$000C.

The 68000 has 56 instructions and 14 addressing modes. This is very similar to the 6502. But there are 17 general-purpose 32-bit registers. Eight are considered data registers, seven are address registers, one is the stack pointer and the last is the program counter.

THE REGISTERS

All of the data registers are general purpose and can be used as index registers or counters. They can handle bytes, words, and long words. The address registers are primarily designed to hold addresses, but can be used as index registers. Unlike the data registers, they cannot handle 8-bit bytes.

The stack pointer can also be used as a general purpose address register. It is actually two registers and will contain different data depending upon whether you are in supervisor or user operating mode.

The last 32-bit register is the program counter and, although it is a 32-bit register, only 23 of the bits are used. Since instructions consist of words instead of bytes, the counter can access a range of 8M words, or 16,777,216 bytes. 6502 programmers will feel like a gnat in the Houston Astrodome.

STATUS REGISTER

The last register in the 68000 is the 16-bit status register, which is divided into two 8-bit bytes. The lower 8 bits are for the user mode and the upper 8 for the supervisor. Not all available bits are used. The user flag bits are:

BIT	SYMBOL	CONDITION
0	C	Carry
1	V	Overflow

BIT	SYMBOL	CONDITION
2	Z	Zero
3	N	Negative
4	X	Extend
5-7	(Unused)	

Supervisor status flag bits 8 through 9 are used in various combinations to signal interrupt priority for the seven levels of interrupt. The 13th bit switches the modes between supervisor and user, and the 15th bit places the 68000 in trace mode. Bits 11,12 and 14 are unused.

ADDRESSING MODES

As stated above, there are fourteen addressing modes:

1. Data register direct
2. Address register direct
3. Register indirect
4. Register indirect with post-increment
5. Register indirect with pre-decrement
6. Register indirect with displacement
7. Register indirect with index
8. Absolute short
9. Absolute long
10. PC relative with displacement
11. PC relative with index
12. Immediate
13. Quick Immediate
14. Implied register

Given the number of registers and data types, the flexibility of register use, and the amount of indirection indicated in the address modes, there is incredible power available in the 68000.

MC68000 INSTRUCTIONS

Table 1 is a chart of the 68000 instruction set mnemonics with brief definitions.

Some instructions will be familiar to 6502 programmers, but many will be completely alien. There are no LDAs or STAs for example, because the 68000 is not accumulator bound. There is the remarkable MOVE which will move anything from anywhere to anywhere else.

Programming syntax for the 68000 on currently available assemblers is identical to popular 6502 assemblers, in that each line consists of:

Line number (Label) Mnemonic (Operand) (Comment)

The mnemonic field, however, may contain a three, four or five letter mnemonic, and instructions can occupy from one to five words in memory.

O BRAVE NEW WORLD

We hope this article has generated more questions than answers. Atari owners have been waiting a long time for The New Machine. It's here at last. I, for one, can't wait to get my hands on it.

68000 Assembly Language Programming

by Kane, Hawkins & Leventhal

Osborne/McGraw-Hill

2600 Tenth Street

Berkeley, CA 94710

(415) 548-2805

\$18.95

The 68000: Principles and Programming

by Leo J. Scanlon

Howard W. Sams & Co.

4300 West 62nd Street

Indianapolis, IN 46268

(317) 298-5400

\$15.95

Table 1

Instruction Mnemonics

Mnemonic	Description
ABCD	Add Decimal with Extend
ADD	Add
AND	Logical AND
ASL	Arithmetic Shift Left
ASR	Arithmetic Shift Right
BCC	Branch Conditionally
BCHG	Bit Test and Change
BCLR	Bit Test and Clear
BRA	Branch Always
BSET	Bit Test and Set
BSR	Branch to Subroutine
BTST	Bit Test
CHK	Check Register Against Bounds
CLR	Clear Operand
CMP	Compare
DBCC	Test Cond, Decrement and Branch
DIVS	Signed Divide
DIVU	Unsigned Divide
EOR	Exclusive OR
EXG	Exchange Registers
EXT	Sign Extend
JMP	Jump
JSR	Jump to Subroutine
LEA	Load Effective Address
LINK	Link Stack
LSL	Logical Shift Left
LSR	Logical Shift Right
MOVE	Move
MOVEM	Move Multiple Registers
MOVEP	Move Peripheral Data
MULS	Signed Multiply

MULU	Unsigned Multiply
NBCD	Negate Decimal with Extend
NEG	Negate
NOP	No Operation
NOT	One's Complement
OR	Logical OR
PEA	Push Effective Address
RESET	Reset External Devices
ROL	Rotate Left without Extend
ROR	Rotate Right without Extend
ROXL	Rotate Left with Extend
ROXR	Rotate Right with Extend
RTE	Return from Exception
RTR	Return and Restore
RTS	Return from Subroutine
SBCD	Subtract Decimal with Extend
SCC	Set Conditional
STOP	Stop
SUB	Subtract
SWAP	Swap Data Register Halves
TAS	Test and Set Operand
TRAP	Trap
TRAPV	Trap on Overflow
TST	Test
UNLK	Unlink



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GET TRACKING!

MANIPULATING STRINGS

More power and speed from BASIC

by BRIAN WEISS

Learn how to manipulate the Variable Name Table and Variable Value Table in your BASIC programs. Professional programmers use these powerful techniques to add speed and variety to their code. The BASIC listings work with all Atari computers of any memory size.

If you program in BASIC, you've almost certainly used string variables to store and manipulate character strings. In this article, we'll see how Atari BASIC handles string variables. Then we'll show you how to use this information to harness the impressive power and speed of string manipulation in Atari BASIC.

These techniques come in handy

whenever you have to move or modify a large area of memory. Some possible applications are: redefining character sets, changing display lists, manipulating machine language programs from BASIC, moving players in Player/Missile graphics, and changing screen memory for animation or page flipping.

VARIABLE TABLES

Atari BASIC uses two tables to keep track of the variables used in your program: the Variable Name Table and the Variable Value Table.

The Variable Name Table holds the names of all the variables used in your program. It also tells the computer if a variable contains a string, a number, or a numeric array.

The Variable Value Table records

the size and contents of each variable.

Whenever you use a new variable, whether it's in a program or a direct command, the computer updates both tables. Moreover, when you SAVE a program to disk or cassette, the tables are saved as well. Both tables will remain in memory until you LOAD another program, issue a NEW command, or turn off the computer.

FINDING TABLES

The location of these tables in memory depends upon the length of your program. To find them, we check the contents of four special

LINDA TAPSCOTT

memory locations which point to the start of the tables. These are:

VNTP = PEEK (130) + PEEK (131) * 256

VVTP = PEEK (134) + PEEK (135) * 256

VNTP is the starting address of the Variable Name Table and VVTP is the starting address of the Variable Value Table.

The Variable Name Table stores the names of all variables in the order they appear in your program listing. It also stores the type of each variable (string, numeric, or numeric array).

Listing 1 displays the contents of the Variable Name Table in a readable format. The subroutine in lines 1000 through 2005 can be appended to any BASIC program for a listing of the variables used. Type in Listing 1, check it with TYPO II and SAVE a copy.

INTERPRETING TABLES

The Variable Value Table tells the computer where to find the contents of each variable. It also contains the size of each variable. It uses eight bytes per variable to store this information. We'll refer to these bytes as byte one, byte two, etc.

Byte one determines whether the variable represents a string or a number. (A 129 in this location would denote a string variable.)

Byte two is a reference number (0 through 127) assigned to that variable. This is the number which the computer uses to identify each variable.

Byte three and byte four tell the computer where it can find the contents of the variable.

Byte five and byte six contain the length of the variable, and byte seven and byte eight contain the maximum size of the variable. In the case of string variables, this value is equal to its dimensioned length. For example, consider the BASIC line:

```
10 DIM A$(12):A$ = "ABC"
```

In this case, A\$ is three characters long, but its maximum size is 12.

Interpreting bytes three through eight requires an understanding of how the computer stores numbers in memory locations. A single memory

location can only store numbers between 0 and 255. The computer breaks up larger numbers into two parts and uses two memory locations to store them.

The first location contains the number of 256's in the number. Programmers refer to this as the "high byte" of a number. The second location, the "low byte," contains the rest of the number.

To calculate the size of a string variable, we multiply byte five by 256 and add byte six. We used the same method to calculate the starting addresses of the Variable Name Table (VNTP) and the Variable Value Table (VVTP) at the beginning of this article.

Finding the location of a variable in memory is slightly more complicated. Strings and arrays are stored in the String and Array Table. Byte three and byte four contain a pointer, or "offset value," used to locate a variable in this table.

First, multiply byte three by 256, and add byte four to determine this offset value. Now, add this to the starting address of the String and Array Table. This address can be found with the equation: STARP = PEEK (140) + PEEK (141) * 256. The final value is the actual address of the string. You could also find this address with BASIC's ADR function.

The location of the String and Array Table varies with the size of your BASIC program. For this reason, references to this table should only be done under program control, not through direct commands.

Listing 2 will display the values of byte one through byte eight for each string variable in the Variable Value Table.

Listing 3 takes the same information and interprets it for you, printing the actual size and location of each string variable in the program. Both of these listings should be checked with TYPO II and SAVE before you RUN them.

LOCATING VARIABLES

Searching through the variable tables for information about a particular variable is a complicated, error-prone, and often unnecessary procedure. We

can easily design and build our own variable tables, if we follow one simple rule: The order of variables in the tables must be the same as the physical order of the variables in your program. Consider the following program:

```
10 DIM A$(3):A$ = "ABC"
20 GOSUB 900
30 DIM B$(3):B$ = "DEF"
40 END
900 DIM C$(3):C$ = "GHI"
910 RETURN
```

In this program, A\$ will be the first variable in the variable tables because it's the first variable in the program. B\$ will be the second, and C\$ will be the third. (Note that the computer builds the variable tables according to the physical order of variables in your program, NOT the logical order.)

If you want to manipulate a variable through the variable tables, it's wise to declare that variable in the first line of your program. This places it at the top of your variable tables.

Remember to type NEW before typing in your program to assure that no information is left in the tables from earlier programs or direct commands.

If you forgot to do this, you can LIST the programs to disk or cassette, type NEW, and ENTER the program again. Do not use SAVE and LOAD since these commands save the variable tables along with the program.

CHANGING VARIABLES

Both variable tables are in RAM which means that their contents can be changed using BASIC's POKE statement.

For example, suppose we wanted to change the name of the first variable used in Listing 1 from A\$ to B\$. Since A\$ is the first variable used, it will be at the beginning of the table and its name will be in location VNTP. LOAD in Listing 1 and then type:

```
POKE VNTP, ASC ("B")
```

Now LIST the program. All references to A\$ are now B\$.

continued on next page

VALUE TABLE CHANGES

More powerful effects can be achieved by changing the Value Table. By changing a string variable's entry in this table, we can position it anywhere in memory. We can also change its size.

If we place our string variable in a region of memory used for other purposes, we can use it to change those memory locations. For example, if we relocate a string variable to an area reserved for Player/Missile graphics, we can control the players with several well-placed POKES to the variable tables.

To do this, of course, you'll need a working knowledge of Player/Missile graphics, and that's beyond the scope of this article. Instead, we'll relocate a string variable to screen memory. In this way, we'll change what's on the screen by changing the appropriate entries in the Variable Value Table.

Recall that the Variable Value Table contains information about the location of string variables. This information is kept in bytes three and four in the table. In Listing 3, A\$ is the first variable dimensioned. Since its byte one value is in memory location VVTP, its byte three value can be found by PEEKing (VVTP + 2), and its byte four value is in (VVTP + 3).

SLIDING STRINGS

Let's move A\$ to screen memory. The address of the beginning of screen memory is calculated in line 100 of listing 3, and stored in the variable SCRN.

Next, we use SCRN to calculate A\$'s new byte three and byte four values for the Variable Value table. Use the following formulas:

Offset = (new location) -
(PEEK(140) - PEEK(141) * 256)

Byte four = INT (Offset/256)

Byte three = Offset -
Byte four * 256

Lines 150-170 perform these calculations. These new values are POKED into the Variable Value table

in line 200. These POKES slide the contents of the string variable into screen memory.

Lines 250-290 change the variable's size by altering the values for bytes five and six in the Variable Value Table. We can calculate the new values with these formulas:

Byte six = INT (size/256)

Byte five = size - byte six * 256

In this example, we use a size of 400 bytes. This allows us to control the top ten lines of the Graphics 0 display screen.

MODIFYING MEMORY

Once relocated, a string variable can be used to modify the area of memory it occupies. Manipulating the string contents alters the contents of the memory locations. An example is the line:

A\$ = "ABCD"

This will put a 65 in memory location SCRN, 66 in SCRN+1, 67 in SCRN+2, and so on. Since we are dealing directly with the screen, we must use internal character codes rather than ATASCII. In line 400 of Listing 3, A\$ is completely filled with CHR\$(0), the ATASCII "heart" character. This puts a 0 in the first 400 locations of the screen memory area, and 10 blank lines are on the screen.

Line 420 puts the word "HELLO" on the second line of the screen by placing the characters "%,," into A\$, and then sliding A\$ to screen memory. In this example, when a 40 (ATASCII code for a left parenthesis) is POKED into screen memory, the letter "H" appears on the screen.

The speed you can achieve with this "string sliding" is rivaled only by machine language. Imagine the graphics effects possible!

FOUR STEPS

Four basic steps are needed for positioning string variables in memory:

1. Dimension the variable in the beginning of your program.

2. Calculate VVTP, the starting address of the Variable Value Table, from locations 134 and 135.

3. Select a new memory location for your string variable, break the address into low and high bytes, and POKe these new values into the Variable Value table at byte three and byte four.

4. Calculate the new size of the string variable and place these values into byte five and byte six. Byte seven will contain the new value you need for byte five, and byte eight will contain the value you need for byte six.

Once the string variable is positioned, characters in the string will correspond to numbers in the memory locations. This method can be used to place numbers in memory by placing characters in the string. You can also to read numbers from memory by reading the string.

A string can even be positioned in the area of memory where a program is stored—resulting in a program that can write other programs! As you learn more advanced programming techniques, you'll discover many more uses for relocating string variables.

Brian Weiss is a computer science major at the University of Maryland and has been programming with the Atari for four years.

Listing on page 66



Lazy loader

Extra-convenient menu program

by FRANK WALTERS

This utility presents you with a menu of your BASIC programs. One-touch commands permit RUNNING of SAVED programs or ENTERing of LISTed programs. Works on all Atari computers with 24K memory; BASIC and a disk drive.

When you're wallowing in dozens of floppy disks, it's comforting to immediately determine what programs lie on each disk and run them, without switching between BASIC and a DOS menu.

What you need is a menu program. "What?", you say, "Another menu program?"

Ah—but Lazy Loader is different. It allows you to enter LISTed BASIC programs, reads up to four disk drives, and displays up to 51 files with horizontal scrolling.

USING THE PROGRAM

Type in Listing 1 and check it with TYPO II. SAVE it to a disk under the file name LAZYLOAD.BAS.

You can RUN the program right now and see all the BASIC files on your disk. Or, you can have the menu automatically boot with the disk by including an AUTORUN.SYS file (See accompanying article for more information about AUTORUN.SYS files.

The file names will appear in a column in center screen. If you have more than 17 files, the column will scroll to the left one line at a time as a second column appears.

Because Lazy Loader is designed to handle BASIC programs, it will not display files with the extenders .SYS, .OBJ, .EXE, or .DAT.

Each file name is displayed with a letter, from capital A to Z, then lower case a to z.

To run a program, strike the corresponding letter. When choosing a file with a lower case letter, be sure that you are in lower case mode. This status will be displayed in the upper left corner.

If you want to see the file names of a different drive, choose the appropriate drive number (1-4).

ENTER OR RUN

In addition to RUNNING tokenized or SAVED programs, Lazy Loader ENTERs untokenized, LISTed files. Again, just press the key corresponding to the program you want. You don't need to press [RETURN].

If an error should occur, its number appears in the upper right corner. Press [RETURN] and the program will continue.

To read a new disk in the same drive, swap disks and press [RETURN]. To run DOS from drive 1,

press [CTRL D].

Frank Walters, a retired Air Force fighter pilot, is a one-and-a-half year veteran of the Atari computer. He has also been a practicing amateur magician for 35 years.

Listing on page 68

ALL ABOUT AUTORUN.SYS

There's not much point to using a menu program like Lazy Loader without an AUTORUN.SYS file—which will AUTOMATICALLY RUN another program when your Atari is turned on. Here are the details of how it works and how to make one for Lazy Loader.

When you turn on your computer, it automatically goes through an initialization process called "coldstart." This is a byte-by-byte checking procedure that sets various statuses and values in the computer's central processor and other chips.

This overall process, called "booting" or "booting up" your computer, checks how much RAM is available, what peripherals are attached and turned on, and so on.

If a disk drive is on when you power up, the computer boots whatever disk is in the drive. If that disk contains the Atari Disk Operating System (DOS), it will be booted

continued on next page

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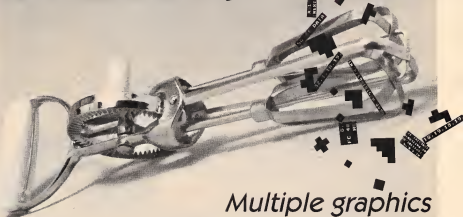
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MODE MIXER

UNDA TAPSCOTT



by KARL E. WEIGERS

Multiple graphics modes on one screen

Mode Mixer is a utility program for easily creating custom display screens that use multiple graphics modes, and then saving them to disk for later use in your own programs. Written in BASIC, Mode Mixer requires a disk drive and will run on all Atari computers with 32K, depending on screen use.

DISPLAY LIST

The Atari's video display is created by a special microprocessor chip called ANTIC. (Yes, as in the title of your favorite magazine.) ANTIC can present information in 14 different graphics modes, six for text and eight for plotted graphics.

Only nine of these modes are available directly from BASIC on the old Atari 400 and 800 computers, but 13 of them can be accessed in BASIC with the XL models. The graphics modes differ in their horizontal and vertical resolution, number of colors shown, and amount of memory consumed (Table 1).

The program which tells ANTIC what kind of display to show is called a "display list". A nice introduction to display lists and mixed-mode principles is found in "Display Lists Simplified" (Antic, Feb/Mar 1983). "Unlocking the 56 Graphics Modes" (Antic, Sept. 1984) illustrates all these modes and provides more information about the Atari's video display.

A BASIC graphics call will only give you a screen of one mode (with the exception of windows). To construct a mixed-mode display, you must create a display list to tell ANTIC how many "mode lines" of each desired graphics mode to show. The resulting screen is made up of several horizontal bands or segments, one band for each block of lines in a particular graphics mode.

The display list also contains some other information, and a few tricks have to be played to print or plot correctly in the different segments. For each graphics mode, one mode line consists of a specific number of horizontal TV "scan lines", ranging from 1 for ANTIC mode 15 (GRAPHICS 8) to 16 for ANTIC mode 7 (GRAPHICS 2). A complete screen must contain 192 scan lines. Keep these numbers in mind as you use Mode Mixer.

USING MODE MIXER

Type in Listing 1, check it with **TYPE** II, and **SAVE** a couple of backup copies. **RUN**ning the program shows you a menu. Just press a number key to choose a menu selection; it is not necessary to press **[RETURN]**:

1. Create a New Display: Begin with this option. You will see a screen which prompts you to enter the **ANTIC** graphics mode (2-15) for the first segment. Then you can specify the number of mode lines for that segment. Continue this process for all the segments in your display. The table at the top of the screen keeps a running description of your display as you compose it. Keep an eye on the number of scan lines remaining, which goes down each time you describe a new segment. The goal is for this number to be zero when your display is complete.

You can enter up to 16 segments per display, combining the available graphics modes any way you like. When prompted for a graphics mode, enter the **ANTIC** mode number from *Table 1*, not the usual **BASIC** graphics mode number. To cancel an entry, enter zero for the number of mode lines. When you have completed the description of your display, and wish to return to the menu, enter zero for the next mode number.

Notice that selecting option 1 at the menu erases forever any display already in memory.

2. Change the Current Display: Use this option to modify the display currently in memory, whether you just created it or loaded it from the disk. You will be prompted for the segment number to modify, and then for the new graphics mode and number of lines.

If the number of scan lines remaining is greater than zero and the number of segments in the display is less than 16, then you can add new segments to the bottom of the display. When prompted for the segment number, just enter the number one greater than the last segment number already in the display. Also, you can erase a segment by setting the number of mode lines for that segment to zero.

When you have finished editing the display, enter zero for the segment number to change. You will return to the menu.

3. See the Current Display: This function actually generates the display list from your description of the mixed-mode screen. The TV screen will be black briefly while the calculations are done, and you will hear a tune reminiscent of Woody Woodpecker when the computer is done. At that point, you will see the mixed-mode display. Admittedly, it isn't very interesting: just bands of blue (for **ANTIC** modes 2, 3, and 15) and black (for all other modes). In fact, you may not see anything at all. Rest assured that all is well, however. After you hear the tune, press any key to return to the menu.

4. Save Current Display on Disk: This part of Mode Mixer writes a program for you and stores it on the disk.

First you will be asked to supply a file name. Use any legal Atari disk file name, without extender. Unless otherwise specified, Mode Mixer assumes you mean disk drive one, and it assigns an extension of ".DSP" to the file name you give. If you try to save the display before you viewed it with menu option 3, you will go through step 3 anyway.

The resultant file will be a **BASIC** program, stored in **LIS**ed form. We will talk later about how to use this program.

5. Load a Display from Disk: Here you can retrieve a display from the disk for further editing. **MODE MIXER** shows you a list of all the files with extension ".DSP" and you type the name of the file you wish to load. Enter a zero if you decide not to load anything after all.

It takes several seconds for the program to read the file and reconstruct the display description. When this process is complete, you will be at the "Change the Current Display" screen. Notice that using option 5 replaces any existing display in memory with the one you load from the disk.

6. Done With This Program: Choose option 6 to leave Mode Mixer and return to **BASIC**.

STORED DISPLAYS

To use a stored display, type **NEW** to clear out any program already in the computer's memory, then type **ENTER "D:filename.DSP"**. You can now **RUN** this program to recreate the display as you described it to **MODE MIXER**. This program consists of several parts:

1. Line 10, which calls a subroutine at line 30000.
 2. Several statements which set up the various segments in your display. Each begins with a **POKE 87,n** command, where *n* is a **BASIC** graphics mode number.
 3. An **END** statement at line 29999.
 4. A block of statements beginning at line 30000 which set up the display list needed by your mixed-mode screen.
 5. A subroutine beginning at line 31000 which controls memory allocation for each display segment.
- The point of all this work so far is to help you get some fancy displays on the screen. You accomplish this by thinking of each segment as a separate little screen. Following each of the **POKE 87,n** statements you can insert any appropriate text or graphics display commands. For text modes (**ANTIC** 2-5) use **POSITION** and **PRINT #6;** statements.
- In the graphics segments (**ANTIC** 6-15), use **PLOT** and **DRAWTO** commands. The upper left corner of each screen segment is location 0,0. Be sure not to plot or print outside the allowable horizontal and vertical boundaries

continued on next page

of a segment, based on the number of mode lines you have in each segment.

You can easily combine a program written by Mode Mixer with any other BASIC program. Use the ENTER command to retrieve the display program file from disk and merge it with another program already in memory. Remember that line numbers from an ENTERed file replace any statements with the same line numbers in the existing program when you do a merge operation.

AN EXAMPLE

Listing 2 is a sample program written by Mode Mixer. The display specified has six segments: 4 lines of ANTIC mode 6; 4 lines of ANTIC 2; 20 lines of ANTIC 14; 4 lines of ANTIC 5; 20 lines of ANTIC 15; and 6 lines of ANTIC 10.

Type in Listing 2 and LIST it to disk. Next, type in listing 3 and SAVE it. With listing 3 in memory, ENTER Listing 2 to merge the two programs, then RUN it to see a nice demonstration of the kind of complex displays you can produce using Mode Mixer and a bit of your own creativity. NOTE: Press [SYSTEM RESET] after running any program created using Mode Mixer.

OTHER TIPS

You can change the color registers as usual in a program with a mixed-mode display. (Atari Color Graphics or Atari Graphics and Arcade Game Design, available from the Antic Catalog, fully describe what the different color registers do in each BASIC graphics mode.) Using display list interrupts (see "More Interrupting" in Antic, Dec. 1983) to get different colors in different segments will help create truly dazzling displays.

To get a uniform background color for displays in which ANTIC modes 2, 3, or 15 are mixed with the other modes, use a SETCOLOR Z,H,L statement, where H and L are the hue and luminance of the desired background color (0,0 is the default). Unfortunately, this also makes any graphics which use a COLOR 3 statement invisible.

I haven't forgotten about the three GTIA graphics modes, BASIC modes 9, 10, and 11. These all use the same display list as ANTIC 15, so just create a segment with mode 15 with Mode Mixer. Then change the POKE 87,8 statement for that segment to a POKE 87,9 (or 10 or 11, depending on the GTIA mode you want). You will need to use display list interrupts to alter the GTIA location at \$D01B for only the appropriate segments.

The XL computers have a BASIC mode number for all ANTIC modes except 3. Programs written with Mode Mixer will work fine on the XL computers. However, you may wish to change the "n" in the POKE 87,n statements for segments of ANTIC 4, 5, 12, and 14 to the appropriate BASIC mode from Table 1.

Line 15 of Listing 3 (POKE 752,1) prevents stray cursors from appearing when printing in text segments of a mixed mode display.

Table 1

Atari Graphics Modes

ANTIC	BASIC	Scan Lines/ Mode Line	Mode Lines/ Screen
2	0	8	24
3	NONE	10	about 19
4	12 (XL)	8	24
5	13 (XL)	16	12
6	1	8	24
7	2	16	12
8	3	8	24
9	4	4	48
10	5	4	48
11	6	2	96
12	14 (XL)	1	192
13	7	2	96
14	15 (XL)	1	192
15	8	1	192

Table 2

Variables Used in Mode Mixer

INC	— increment counter for number of bytes per segment
MODE	— ANTIC mode for each segment
LINES	— number of mode lines for each segment
SLPER	— number of scan lines per mode line in each ANTIC mode
BPER	— number of bytes per mode line in each ANTIC mode
BAS	— BASIC graphics mode number to use for each ANTIC mode
B\$	— general use string variable
A\$	— general use string variable
FNAME\$	— filename for loading or storing display
BL\$	— string of blank characters
OFF	— value to disable a TRAP statement
NO	— line number of subroutine to make error sound
MEMORY	— line number of a subroutine to set screen memory locations for a segment
LOCS	— line number of a subroutine to calculate location of screen memory and display list
SPACE	— line number of a subroutine to wait for space bar to be pressed
DL	— starting location of display list
MEM	— starting location for screen memory
LMEM	— low byte of starting location of screen memory
HMEM	— high byte of starting location of screen memory

BYTE	— number of bytes of screen memory in a segment
CH	— general input variable
NSEG	— number of segments in a display
GRA	— ANTIC mode of current segment
NUM	— number of mode lines in a current segment
LEFT	— number of scan lines left in this display
A	— general input variable
CT	— counter for number of bytes in display list
OSMODE	— mode number of a segment as read from disk
MAX	— BASIC graphics mode number of segment in the display with the greatest screen memory requirement
FOURK	— next 4K boundary after beginning of screen memory
Y, I, J	— variables for loops, offsets, temporary calculations
LN	— line number of statement in file being saved to disk

5999-6050	see the current display routine starts here
6100-6140	figure out maximum memory requirements mode
6145-6290	create display list in page 6
6320-6360	show display, play tune, wait for keypress
6370-6380	branch based on whether user wants to store display
6999-7000	save display on disk routine starts here
7010-7080	get filename and open file
7100-7420	write statements to file which will recreate display
7500-7520	error handling for bad file open

Karl Wieggers is a frequent contributor to the pages of Antic. His most recent work was "Touch Tablet Cursor" seen in our January 1985 issue

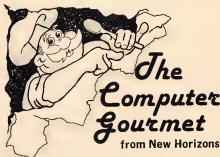
Listing on page 63



Table 3

Mode Mixer Program Take-Apart

Line Numbers	Function
1-99	Initialize variables and arrays
100-230	menu
500-520	subroutine to make error sound
550-560	subroutine to set new screen memory locations
600-610	subroutine to calculate screen memory locations
625-635	subroutine to pause until space bar is pressed
900-970	subroutine to set up display create/change screen
999-1070	create a new display; define mode for a segment
1080-1100	define number of mode lines for a segment
1110-1140	calculate number of scan lines left, update table
1999-2005	change current display routine starts here
2010-2040	show current display description
2050-2165	input segment number to change and make changes
2170-2190	update table describing display
2999-3080	load display from disk; show displays on disk
3090-3170	get file to load, open file
3180-3290	figure out no. of segments & display list bytes
3300-3400	figure out no. of mode lines per segment



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beer party atari



by DR. JOHN C. FERGUSON

"The Atari is just a game machine." Do those words set your blood a-boil? Well, the staff at Antic is tired of them too, and spends a good portion of its time diligently combing the incoming submissions for practical applications programs. We receive a lot of disk directory programs, recipe file storers, mini word-processors, and other rebashed versions of old ideas. But now we'd like to award Dr. John C. Ferguson the Honorary Antic Unprecedented Application Program of the Year Award for his fine Beer Party Atari. A program whose time has come. —ANTIC ED

My wife and I decided to have a party one evening for a fairly large number of workplace acquaintances. The trouble with such social gatherings is that "shop talk" tends to predominate and guests don't really get to relax and have fun. Our answer to this concern was to organize the party around the distraction of a "beer sampling" — to determine which brand of beer is best. The Atari provided an ideal tool to focus the group's attention towards finding an

This useful applications program will keep track of the best brew in a beer-tasting party. The programming makes good use of custom display lists and character sets. So non beer-drinkers might wish to type it in and change the name to Rootbeer Party Atari. It is written in BASIC and will run on all Atari computers with 16K. A disk drive is recommended, but the article explains how to run the program without one.

unbiased corporate answer to this important question.

We set up a table with five pitchers containing different beers. These were kept filled, out of sight, from cans of popular brands kept on ice. While the guests knew which brands of beer were involved, the pitchers were only labeled as "A", "B", "C", "D", or "E". The guests thus had to taste from each pitcher and give the mystery beer a rating. They could jot notes on a piece of paper to help themselves remember.

After sampling and rating each of the five beers, they then typed their evaluations into the Atari. The program I developed for this purpose made it easy for even the most computer-phobic in the crowd.

SOBERING INFLUENCE

The program provided a prompt for entering the rating of each beer, and then a chance to verify that all five were keyed in correctly. It then calculated the average accumulated score for each beer, saved the data to disk, and quickly showed a graphic display of how the different beer brands stacked up in the opinion of the judges.

A lot of guests were very surprised to see how swiftly the scores changed as more and more people entered their choices. It became almost like a horse race! If things got close, the numerical values of the average scores could be displayed by pressing [S] while the graph was onscreen.

VALUABLE DATA

Saving the data to disk after each set of entries was a feature added to the program to make sure that an accident didn't happen to spoil the accumulated results. It was fortunate that this precaution was included, because a power glitch did occur in the middle of my party and wipe out the program. However, I was able to quickly reload it, recall the accumulated data,

continued on next page

and continue on as if nothing had happened.

All in all, my beer party was a tremendous success. Everybody had a good time, and work worries were kept well out of mind.

THE PROGRAM

Type in the program, check it with **TYPE II** and **SAVE** a copy. Much of the program is internally documented with **REM** statements. When you **RUN** it, the computer will first ask you if you want to add to a previous file—that is, do you want to start with data saved from a previous run of the program. The first time your answer should be **[N]**. Note that if this choice is taken, any previous file of **BEERDATA** will be deleted and replaced with a brand new one. If you answer **[Y]** you are given a chance to insert the particular **BEERDATA** file disk you want to add onto before the program continues.

WITHOUT DRIVES

If you do not have a disk drive, you can still use the program without this

feature. You should type **REM** after line numbers 110-160 and 1450. This will update your scores in memory without **SAVE**ing them. It also preserves the code for possible future use when you do have access to a drive.

MODIFIED CHARACTERS AND DISPLAY LIST

Several programming "tricks" were used to produce the varied and interesting screen displays. First, some characters of the normal Atari font were modified to produce graphic representations of a beer stein and pilsner glasses. (See lines 10000-10200.)

Next, a customized Graphics 0 screen was produced by modifying the display list to show several lines of Graphics 1 and Graphics 2 (program lines 1030-1055). Now, when the altered characters, the normal text, and the special Atari control characters are all put together, in any of the three sizes provided by the modified screen, the result is a really

sophisticated display. This was produced with remarkably little code—Ah, the beauty of Atari!

NAME YOUR BRAND

When you use the program, you will want to select your own five brands of beer to compare. These should be reprogrammed into lines 1550-1630. Note which beer corresponds to each code letter—you don't want to have these mismatched. For my first party I invested in a case of pilsner glasses and a sufficient quantity of five middle-line popular beers. Next year I think I will do it again with an international flavor—rating beers from five different countries.

Dr. John C. Ferguson is a Professor of Biology in the Department of Natural Sciences at Eckerd College in St. Petersburg, Florida. Dr. Ferguson has taught at Eckerd since 1963 and specializes in Marine Biology and Oceanographic Sciences.



Listing on page 62

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SON OF INFOBITS

*Now you can save and edit
your Infobits files*

by ANDY BARTON

This enhancement of the remarkably simple and popular file program from the December, 1984 Antic provides an easy way to save, retrieve, edit and delete short notes and data. Written in BASIC, the all-new version is complete in this issue and will run on any Atari computer with a disk drive.

In the December, 1984 Antic we ran a program called "Info Bits" by Andy Barton, author of TYPO II. Published primarily to demonstrate how much can be accomplished with a small amount of programming, we described Info Bits as the "Simplest database ever!". We received many letters from readers who loved the program but wanted it just a little less simple.

Specifically, they wanted to know how to edit or erase some of the many entries they were putting into their "Info Bits" data files. We contacted Andy and received the following update. —ANTIC ED

INFOBITS MODIFIED

Info Bits was originally written as a hasty last effort, after two rejections, to get something published. It was purposely kept short, simple and direct, with no frills added. In this spirit, a "Delete Entry" routine was not included. (And, to be honest, I didn't think about it until some time later when I found I had no way to correct a typographical error in one of my entries.)

TYPING THE PROGRAMS

Listing 1 is the new Info Bits. (Filename: INFONEW.BAS.) Those of you who typed in the original program may notice a few matching lines, but there are many changes so you will probably be best served by typing in all of the new listing. Remember to check your typing with TYPO II and SAVE a copy of the program before running it.

continued on next page

Listing 2 is a brief program which corrects a bug in the original Info Bits program by modifying its INFOBITS.FIL data file. If you have no Info Bit files yet, you can ignore this listing. Those who wish to use their previous INFOBITS.FIL entries with the new Info Bits must use this program to reconfigure their old files.

After typing in Listing 2 with a TYPO II checkup and SAVING a copy, place the disk with a copy of your INFOBITS.FIL on it. RUN listing 2 and it will remove the leading 10 blank spaces in front of each entry on the file. Note: Listing 2 was kept purposely short and contains no error trapping. Make sure your disk contains the INFOBITS.FIL before you run the program.

USING THE PROGRAM

Info Bits is a mini data base. You can type in notes and references and then retrieve them by searching for a key word or phrase—which can be anything in your entries.

Before you can use Info Bits, you must create an empty file named INFOBITS.FIL on whichever disk is in drive one. To create the file, type in the following:

```
OPEN #1,8,0,"D:\INFOBITS.FIL":  
CLOSE #1 [RETURN]
```

After you've done this, RUN the new INFOBITS and you'll see a menu with three choices: 1.) ADD TO FILE, 2.) SEARCH FOR ENTRY, and 3.) DELETE/EDIT ENTRY.

ADD TO FILE

Press [1] [RETURN] and type in a couple of entries, pressing [RETURN] to mark the end of each entry. You don't need any special characters to mark off fields, simply type in a space or two. Each entry can be as long as 119 characters.

When finished making entries, press [RETURN] at the "TYPE ENTRY:" prompt and you will return to the menu.

SEARCHING FILES

To search for data, type [2] [RETURN] from the menu and you will see

SEARCH FOR:. You may type in a word or portion of a word or a complete sentence. Enter your search criteria in capital letters and Info Bits will ignore case distinction in the data it searches.

After entering your search criteria, press [RETURN] and Info Bits will display on screen every entry that contains an exact match of your criteria. If there is more than one screen, the program will pause and prompt you to press any key for more. If you wish to see all your entries, enter ALL at the prompt.

DELETING AND EDITING

Type [3] [RETURN] to select DELETE/ (EDIT) ENTRY. The screen is cleared and you are given 3 choices. First type [S] [RETURN] to search for the entry to be deleted. Repeat this step as often as necessary until the entry you wish to delete is the last one displayed.

Type [D] [RETURN] to delete the last entry displayed. The actual entry being deleted will be displayed on the screen. If you are satisfied with the deletion simply press [RETURN] to return to the main menu. If not, press [Y] [RETURN] to edit it. And when you are ready to re-enter it again, press [RETURN].

You are now in the ADD TO FILE routine of the main menu where you may continue adding entries when asked to TYPE ENTRY:. Or simply press [RETURN] on the blank line (an absolutely necessary step to properly close the disk file) and return to the main menu.

The only safe place to exit Info Bits (turn off the computer or load another program) is from the main menu. If you exit in the ADD TO FILE or DELETE/EDIT routines the disk file will not be properly closed and part or all of it could be lost.

UPPER AND LOWER

Included in this version of Info Bits is a short addition to the machine language routine that allows it to ignore the differences between lower and upper case letters. This allows you to type entries in caps and lower case

letters for aesthetic or other reasons and later find them without having to remember which way you entered them. However, your search strings must be in capital letters.

If you prefer the original version which differentiates upper and lower case letters, simply replace the 5th through 10th numbers in DATA line 2002 with 234,234,234,234,234,234.

Given the infallibility of computers (ha,ha), not to mention that of the operator or programmer, I highly recommend that you regularly make a backup copy of your disk file (INFOBITS.FIL).

Many Antic readers owe Andy Barton a vote of thanks for his TYPO II line-by-line proofreading program, which we've been using with all our BASIC listings since January.

Listing on page 67



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ARENA RACER

by JAMIE SUTHERLAND

Arena Racer is 15 scrolling levels of fiercely challenging maze action. Can YOU fly a speeding Huntercraft through labyrinthian caverns and avoid getting blasted apart by all those Laser Cannons? This unusually fast BASIC program works on all Atari computers of any memory size.

Uh-oh! There's an intergalactic war on and you got shot down onto a rather nasty planet. The local enemy warlord gets plenty of entertainment from Elite Fighter Pilots like you—when they're unlucky enough to fall into his hands. (Yes, you are a rocket ace. You only lost that last dogfight because you were so vastly outnumbered.)

You are tossed into an unarmed Huntercraft and sent down to a hor-

ror known as...the Arena! This Arena is a vast maze of caverns. On each of the caverns' 15 levels, you must collect four glowing orbs, which have been hidden and protected. But...as you fly among the twisting walls of the Arena, scores of deadly laser cannons are firing at you.

If you complete the fifteenth level you get to start over again, with even faster action. Your only reward is survival!! For you see, you are operating under a strict time limit. If you do not complete a level in time, your Huntercraft will disintegrate. HAHAAHA!! (We told you it was a rather nasty planet.)

INSTRUCTIONS

Type in Listing 1, check it with TYPO



II and SAVE a copy before you RUN it.

When playing, you start with four Huntercraft and win a bonus ship after every five levels you complete. Maneuver in any direction with the joystick, even diagonally. Pick up an orb simply by moving over it.

Your joystick trigger is the Panic Button. As long as you hold it down, your Huntercraft stays motionless and is invulnerable to laser hits. The good thing about the Panic Button is that it never runs out of operating energy, you can always use it.

continued on page 51

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game of the month

ARENA RACER

continued from page 49

The bad thing about the Panic Button is that it makes your time limit run out faster. . . Is Arena a hard game to play? All I can say is that I wrote it and I've never gotten higher than 12 of the 15 levels.

PROGRAM TAKE-APART

Initial setup is done in Lines 1000 to 1070. This includes POKEing in the machine language subroutine and character definition.

The major action is found in lines 10 to 70:

- 10 Produces timer sound and checks for OUT OF TIME
- 15 Draws current screen and checks for PANIC BUTTON
- 20 Shuts off timer sound and checks JOYSTICK
- 30 BOOLEAN LOGIC determines joystick direction
- 40 Checks to see if you hit something
- 50-60 If path is clear, lets you move in that direction
- 70 Go back for more

Lines 80 to 280 check what character your ship has hit. The appropriate action is then taken—pick up orb, be destroyed by laser, etc.

CUSTOM SCREEN SETUP

The more adventurous of you can create your own screens. It's not exactly easy, but it can be done after some trial and error.

The Arena is made up of an array of 70 X 70 characters. DATA for the levels is contained in lines 6000 to 6290.

Every second line, beginning at 6000, contains 70 characters arranged in a pattern which makes up the walls, spaces and cannons. Every second line beginning at 6010 contains DATA for placing the four orbs. You may manipulate this DATA as you wish. The only restriction is that first five and the last five characters in each of

the screen DATA statements must each be an "A."

The screen DATA characters represent:

- A Solid line of wall characters
- B Solid line of open spaces
- C,D,F 3 different patterns of walls and spaces
- E,G 2 patterns of walls and spaces that also include laser cannons

Placement of the orbs is more difficult. The four orbs must not be in the path of any laser, on or off the small viewscreen, or they will be destroyed. To determine where you want each orb, multiply the vertical coordinate by 70, add the horizontal coordinate, and place the result in the DATA line immediately following the screen DATA line. This should be done with each of the four orbs for each screen.

Below is an example of a customized first screen. Line 6000 is the screen data, and line 6010 is the placement data for the four orbs.

```
6000 DATA AAAAAABBBBBBBB
BBBBBBBCCCCCCCCCCCCCCCC
BBBBBBBCCCCCCCCCCCCCCCC
BBBBBBBCCCCCCCCCCCCCCCC
BBBBBBBAAAAA
6010 DATA 672.1338.2075
.3045
```

The only way to test your Arena and make sure that everything is working right is to RUN the game. If you want to test a higher level, change L=0 in line 1070. L is the current level minus one. So L=7 would start you out at level 8.

Now you should have enough to get started. Have fun creating your own Arenas.

Jamie Sutherland is a high school junior from Bend, Oregon. His first hands-on computing experience was with the old Sinclair ZX-80 of popular Antic game programmer J.D. Casten. You'll see Jamie's vast scrolling maze game, "Valiant," in Antic soon.

Listing on page 76.

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HANDY USR ROUTINES

Machine language power from BASIC

by ERNIE NEGUS

A collection of short but powerful USR machine language routines that can be usefully plugged into your your BASIC programs for any Atari computer. Antic Disk subscribers ENTER "D:USRCALL.LST" and follow the instructions in the article.

BASIC's USR command lets you use speedy, memory-efficient machine language subroutines from the comfort of BASIC. Although these subroutines are tricky to type, they let your BASIC programs access a wider variety of functions, run faster and occupy less memory.

Simply put, machine code is a series of numbers stored in memory. Each number stands for an instruction to the computer. Once you have the address of this code, the USR function lets you run it from BASIC.

Machine code can be stored in several ways. Here, the code is stored in character strings. We can now use BASIC's ADR function to find the beginning address of the character string, and put this value into our USR call.

Since the computer interprets each character as a machine code instruction, a single mistyped character could cause your computer to lock up when you RUN the program.

You must type in each character string exactly as it appears, checking each line with TYPO II. Refer to the Special Atari Character charts in the Antic listings section if you need additional help.

Also, please note that you only need to type the dot-matrix listing printouts marked with TYPO II codes. The typeset example lines below each listing simply indicate how these listings should be called up in these demonstrations or in your own BASIC programs.

All USR calls have the general form: $X = \text{USR}(z, p1, p2, p3)$ where z is the decimal address of the machine language routine, and $p1, p2$ and $p3$ are input values (parameters) which the machine language routine will use. While some USR calls do not need parameters, others demand several. Any parameters you use must be numbers between 0 and 65,535.

Here are some short USR routines which use machine language to manipulate bits, perform multiple PEEKs and POKEs, evaluate Boolean expressions, and even play music.

Let's examine our USR routines and see how they work:

```
10 BBYT=ADR("00000000000000000000000000000000")
```

```
15 ANS=USR(BBYT,p1,p2,p3,p4,p5,p6,p7,p8)
```

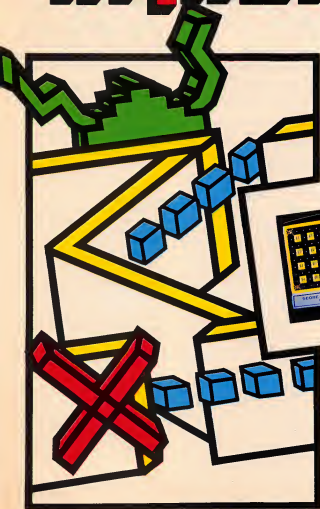
This routine converts binary numbers to decimal. In our example, the mysterious-looking character string is the machine language subroutine. The ADR function determines the decimal address of the subroutine. This address is stored in the variable BBYT. Our final result will be stored in ANS.

We'll use this routine to convert 00001111 to decimal:

First, type in the machine language string as shown in line 10.

AMAZING

by DAVID PLOTKIN



A challenging maze chase game that demonstrates the speed and versatility of the ACTION! language. Requires ACTION! cartridge from Optimized Systems Software. Works on all Atari memory computers with 32K disk or 24K cassette. Antic Disk subscribers will find a "run-time" version on their disk, for playing without the cartridge.



Amazing is a surprisingly imaginative maze chase game written in ACTION! You are a skinny red X named Gork. All you want from life is to wander the city grid, munching up the energy pellets that the programmer thoughtfully left strewn about.

Not surprisingly, three enemies will attempt to stop you with their instantly lethal touch. Luckily, your unique defensive mines can immobilize and vaporize enemies. But of course each opponent is quickly replaced by another.

continued on next page

NEXT ISSUE

IMPROVED PRINTED LISTINGS

Spaces between Atari special characters will make **Antic** program listings easier than ever to type correctly.

See the new instructions for Typing **Antic** Program Listings in June's Software Library section.

Antic's improved custom printing program is written in **ACTION!** by Michael Fleischmann, a regular contributor and a computer engineer at Hill Air Force Base in Utah.

NEXT ISSUE

bonus game

Release a mine by pressing the joystick button. You can have up to four mines on the board at one time. To retrieve an unused mine, touch it. The mines become available again after destroying an enemy. Naturally, higher levels mean tougher opposition.

HOW IT WORKS

Type in Listing 1 and **SAVE** a copy before you compile and **RUN** it.

Now let's look at some of the game's more interesting **ACTION!** procedures.

DRAW7 directly manipulates the screen bytes to **PLOT** a point in the specified color. It's considerably faster than the built-in Atari **PLOT** function.

FASTDRAW is a high speed technique to put a high resolution picture on the screen. It does direct byte manipulation of the screen with no math involved, so it is considerably faster than even **DRAW7**. The value of each byte that makes up the picture is stored in a byte array, and the width, height, x and y coordinates must be passed to the procedure.

The picture itself is generated using **Drawpic** from Artworx. **Drawpic** turns the picture you design on the screen into **BASIC DATA** statements, which can be listed to disk; the format can then be modified to fit into an **ACTION!** program.

MOVEIT moves the player/missile shape defined by byte array **SHAPE** and player number **WHICH** to the specified position on the screen.

BOARDDRAW draws the initial board. It uses **FASTDRAW** and the byte array **BLK** to put the squares with letter A on the board.

TESTCOL tests for collisions between the various players by sampling the hardware collision registers. It waits for a whole screen to be drawn, then transfers the contents of the collision registers to temporary locations in RAM. The collision registers are then cleared. Checking for collisions

is actually done by looking at the temporary locations.

LLOC performs the same function as **LOCATE**, but much faster.

GOTBUMPED processes the collisions of the enemy players and a mine. The explosion sounds and flashing of the obliterated player are handled by repeated calls to this procedure. It also removes the enemy player from the board and positions is back in its original corner.

MUNCH detects collisions between your player and the enemy pellets. It also keeps the sound going and erases the eaten pellet.

CHANGEDIR decides whether to change the direction of an enemy player. It also checks to see if the player can move in the indicated direction. This procedure is only called when the player is in an intersection.

SMARTS determines whether the enemy players are in an intersection.

OUCH is called if your player is caught by an enemy.

CHASE calls **SMARTS** for each layer, and moves the player if it hasn't been destroyed by a mine.

MOVEMAN reads the joystick and moves your player. It checks to see if you can move in the direction you want. If not, then you continue in the direction you are traveling. Thus, you can push the stick in the desired direction *before* you get to an intersection and then move in that direction when you hit the intersection.

Avid ACTION! programmer David Plotkin is a veteran of the Antic program submission procedure and, on the side, a chemical engineer for Standard Oil of California.

Listing on page 77



FADER II

Enhanced dot-by-dot picture dissolves!

by PATRICK L. DELL'ERA

Last month, we published Patrick Dell'Era's reworking of Philip Price's "Picture Painter." We now present Patrick's Fader II, based upon the popular dot-by-dot picture dissolve program by Joseph Grande that *Antic* printed in the September 1984 graphics issue.

The original Fader was written in the BASM language, which is now often hard to find. Patrick has disassembled the object code into full MAC/65 source code, and re-written it with several improvements including a special modification program in BASIC. —ANTIC ED

THE LISTINGS

There are three listings. Listing 1, FADERII.BAS, is the main program. It is written in BASIC and creates a machine language binary file on your disk called AUTORUN.SYS.

Listing 2, FADERMOD.BAS, is a BASIC program which can be used to modify certain of the elements in AUTORUN.SYS. Listing 3, FADERII.ASM, is the assembly language source code and need not be typed in. It is included for machine language programmers who may wish to study and further modify the program.

Type in Listing 1 and check it

This is an enhancement of the popular "Fader" program that appeared in the September, 1984 Antic. The original program created a dot-by-dot "tapse-dissolve" effect on Micro Painter files. Fader II now works on Micro Illustrator pictures as well. The program is complete in this issue—including source code. It will work on all Atari computers with 48K and disk drive.

especially carefully with TYPO II. Make sure you haven't skipped any lines. TYPO II can't check for that.

SAVE a copy of the program. When you RUN Fader II, it will read all of those DATA statements (they are the machine code) and then prompt you to ready your disk and press [RETURN].

Place a fresh, formatted disk in your drive containing DOS 2.05 and two or more picture files. Press [RETURN], and a file named AUTORUN.SYS will be written to your disk. Now, boot the disk and the slide show will begin.

SLIDE SHOW II

Unlike the original program, Fader II can handle both uncompressed and compressed Graphics 7+ picture files. This means you can have any com-

bination of Micro Painter or Micro Illustrator files on the same disk (Micro Illustrator software comes with the KoalaPad, the Atari Touch Tablet and other widely used graphics products.)

So that Fader II can tell the difference between the file types, you must use a .PIC extender on your compressed files. The Micro Painter files should have a .PIC extender (where ? designates any number or letter other than P).

Fader II will cycle through each picture creating a screen pixel dissolve. When it reaches the last file, it will begin again with the first. As with the original program, you may skip the pause between pictures by pressing [START].

In Fader II, after a picture fades in, it may be held indefinitely on the screen by pressing [OPTION]. In this way, one may take a good look at a particularly fetching piece of art, or gracefully change the disk without racing the clock. If you have DOS on your disk, pressing [SELECT] will take you to it.

Fader II does not sit in the DUPSYS area of memory, so a Binary Load can

continued on next page

be done on it from DOS without creating a MEM.SAV file. It will run with or without a cartridge installed.

FADER II MODIFICATION

Although Fader II has an automatic pausing rate, the modification program, FADERMOD.BAS, will allow you to change the length of time the picture is left on the screen—as well as the drive that the pictures are loaded from. This allows quite an effective display for Ramdisk owners who load their pictures into the simulated 128K disk and designate it as the load drive.

Type in Listing 2, again checking it with TYPO II and SAVEing a copy. When RUN, it will ask for the file name (i.e. AUTORUN.SYS, FADERII.EXE, etc.). It then uses NOTE and

POINT to read the appropriate variables. Each time the [OPTION] key is pressed, the drive number is incremented by 1. If it reaches 5, it rolls back to 1.

The pause rate is modified by pressing [SELECT]. Each time [SELECT] is pressed, the pause time is increased by 4.27 seconds until it reaches (255 * 4.27). It then becomes 0. If the minus key [-] is pressed, the pause time will be reduced with each press of [SELECT]. Pressing any other key puts it back into the increment mode.

When your variables are set to your satisfaction, press [START] to save the changes to your program. It is important that the same disk Fader II is read from should be the disk to which the changes are written. Otherwise, an innocent bystander on another disk

could be modified, surely causing its demise.

LISTING 3

As mentioned above, Listing 3 is the MAC/65 assembly source code. It was created with the MAC/65 Assembler Editor by Optimized Systems Software, Ultra Disassembler by Adventure International, and OmniMon by CDY Consulting. Without these three excellent programming tools, the above code could not have been created and modified.

Patrick L. Dell'Era is a member of the San Francisco Atari users' group ABACUS, and a strong assembly language programmer whose time is currently being taken up with a new baby.

Listing on page 70.



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Antic type-in listing section includes every full-length program from this issue. Listings are easier to type and proofread, easy to remove and save in a binder if you wish.

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DISK SUBSCRIBERS: You can use all these programs immediately.

Just follow the instructions in the accompanying magazine articles.



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Antic program listings are typeset by Star's Gemini 10X Printer—From Star Micronics, Inc., 200 Park Avenue, New York, NY 10166.




TYPING SPECIAL ATARI CHARACTERS

Shown below are the Atari Special Characters as printed in **Antic** listings—and the keys you must type in order to get them. Boxes are drawn around the normal video characters here so you can see their positions more accurately; these boxes do not appear in the printed listings.








































Whenever the CTRL key (CONTROL on XL models) or SHIFT key is used, *hold it down* while you press the next keys. Whenever the ESC key is used, *press and release* it before typing the next keys.

Turn on inverse video by pressing the Atari logo key  once. Turn it off by pressing a second time. (XL models use the Reverse Video Mode Key  instead.)










































Sometimes it's not easy to tell apart the following characters, shown here in both normal and inverse video. Be especially careful when you type any of these:

	CTRL F		SHIFT +
	CTRL G		SHIFT -
	CTRL N		ESC -
	CTRL R		ESC +
	CTRL S		

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL T
	CTRL A		CTRL U
	CTRL B		CTRL V
	CTRL C		CTRL W
	CTRL D		CTRL X
	CTRL E		CTRL Y
	CTRL F		CTRL Z
	CTRL G		ESC ESC
	CTRL H		ESC CTRL -
	CTRL I		ESC CTRL =
	CTRL J		ESC CTRL +
	CTRL K		ESC CTRL *
	CTRL L		CTRL .
	CTRL M		CTRL ;
	CTRL N		SHIFT =
	CTRL O		ESC
	CTRL P		SHIFT CLEAR
	CTRL Q		ESC DELETE
	CTRL R		ESC TAB
	CTRL S		

INVERSE VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL Y
	CTRL A		CTRL Z
	CTRL B		ESC
	CTRL C		SHIFT DELETE
	CTRL D		ESC
	CTRL E		SHIFT INSERT
	CTRL F		ESC CTRL
	CTRL G		TAB
	CTRL H		ESC SHIFT TAB
	CTRL I		CTRL .
	CTRL J		CTRL ;
	CTRL K		SHIFT =
	CTRL L		ESC CTRL 2
	CTRL M		ESC
	CTRL N		CTRL DELETE
	CTRL O		ESC CTRL INSERT
	CTRL P		
	CTRL Q		
	CTRL R		
	CTRL S		
	CTRL T		
	CTRL U		
	CTRL V		
	CTRL W		
	CTRL X		

HOW TO USE TYPO II

Type in TYPO II and SAVE a copy to disk or cassette.

Type GOTO 32000 and follow TYPO II onscreen instructions. If the resulting two-letter line codes are not exactly the same as those in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME", 0,31999 [RETURN] (Cassette owners LIST "C:"). Type NEW, then ENTER "D:FILENAME" [RETURN] (Cassette—ENTER "C:"). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

Owners of the BASIC XL cartridge from O.S.S. type SET 5,0 and SET 12,0 before using TYPO II.

```

140 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINES(120):CLOSE #2:CLS
SE #3
BN 32030 OPEN #2:4.0:"E":OPEN #3:5.0:"E"
YC 32040 ? "M":POSITION 11,1:7 "E"
EM 32050 TRAP 32040:POSITION 2,3:7 "Type
in a program line"
HS 32060 POSITION 1,4:7 " ":INPUT #2:LINE
S:IF LINES="" THEN POSITION 2,4:LIST 0
:GOTO 32060
HN 32070 IF LINES(1,1)="M" THEN 0=VAL(LIN
E$(2,LEN(LINES))):POSITION 2,4:LIST 0
:GOTO 32060
TN 32080 POSITION 2,10:7 "CONT"
MF 32090 0=VAL(LINES):POSITION 1,3:7 " ":
NY 32100 POKE 042,13:STOP
CN 32110 POKE 042,12

```

```

ET 32120 ? "M":POSITION 11,1:7 "E"
":POSITION 2,15:LIST 0
CE 32130 C=0:ANS=C
OR 32140 POSITION 2,16:INPUT #3:LINE$:IF
LINES="" THEN ? "LINE "0:" DELETED":G
OTO 32050
VV 32150 FOR 0=1 TO LEN(LINES):C=C+1:ANS=
ANS+(C*ASC(LINES(0,0))) :NEXT 0
MJ 32160 CODE=INT(ANS/676)
JM 32170 CODE=ANS-(CODE*676)
EH 32180 HC00E=INT(CODE/26)
OH 32190 LC00E=CODE-(HC00E*26)+65
HO 32200 HC00E=HC00E+65
IC 32210 POSITION 0,16:7 CHR$(HC00E):CHR$
(LC00E)
VG 32220 POSITION 2,13:7 "If CODE does no
t match press [F7] and edit line a
bove.":GOTO 32050

```

ERROR FILE

BUS OVERLINES

Some signals and address labels were printed without overlines in Part III of Earl Rice's Parallel Bus Revealed" (Antic, March 1985).

These are the correct labels:

DBXX—DEXX
CS (CHIP RESET)
R/W
DIXX
RDE (READ DATA ENABLE)
DS (DATA STROBE)
DRST (DEVICE RESET)

FIRST LESSON IN ASSEMBLY

Line 100 of the listing for "First Lesson in Assembly Language" (November, 1984) should read POKE 755,4 instead of POKE 775,4.

KOOKY'S QUEST

February '85

The following line is missing:
2100 FOR S=32 TO 16 STEP
-4: SOUND 0,5,14,10: EA=EA
"A":EA: SOUND 0,0,0,0: EA=-1
/0:NEXT S

DRUM SYNTH

February '85

In Figure 1, the "ART" should be the Fuji (inverse) symbol.

MISSING INFOBITS

DECEMBER '84

The AI source listing for Infobits (Dec. '84) was left out of the previous issue. You'll find it in the Jan. '85 Software Library.

ADVENT X-5

November '84

Missing line: 8020 RUN. Also, cassette owners should change the 138 in line 4005 to 130. The TYPO II code for line 1005 is EJ.

ADVENTURE ISLAND

November '84

Line 837 is missing its last item of data, a 4. Also, it will not run with DOS XL.

BEER PARTY ATARI

Article on page 43.

LISTING 1

```

GR 10 REM BEER PARTY ATARI
TR 20 REM BY DR. JOHN FERGUSON
RN 30 REM ANTIC MAGAZINE
VC 50 OIM 55(10)
TR 100 CLOSE #1:OPEN #1,4,0,"K":REM OPEN
KEYBOARD FOR INPUT
IV 110 GRAPHICS 0:IF ? 17 ? "DO YOU WANT TO
ADD TO A PREVIOUS FILE"? 17 ? "Y/N
? ?"
NM 120 GET #1,K:IF K<0 THEN BA=0:BB=0:
C=0:BD=0:BE=0:BGOTO 1000
PU 130 ? 17 ? 17 ? 17 ? "MAKE SURE 'BEERDATA
' IS IN DRIVE AND PRESS ANY KEY."? 17 ?
? ?
GP 140 GET #1,K
KL 150 CLOSE #2:OPEN #2,4,0,"D:BEERDATA"
MT 160 INPUT #2:BA,BB,BC,BD,BE,NUM:CLOSE
#2:REM RETRIEVE OLD DATA
UG 1000 GRAPHICS 0:REM CLEAR MEMORY
GV 1010 GOSUB 10010:REM CHANGE CHARACTER
SET
LM 1015 GRAPHICS 0:POKE 700,156:POKE 710,
21:POKE 712,21:POKE 752,1:REM SET COLORS
AND BLANK CURSOR
NM 1020 POKE 756,CNSET/256
NP 1030 OL=PEEK(560)+256*PEEK(561):REM CU
STOMIZE DISPLAY LIST
Y0 1040 FOR N=6 TO 9:POKE OL+N,7:NEXT N
SP 1050 POKE OL+10,6:POKE OL+11,0:POKE OL
+13,66+7:POKE OL+21,6:POKE OL+22,6
II 1055 POKE OL+27,65:POKE OL+20,PEEK(560
):POKE OL+29,PEEK(561)
UM 1057 POKE 02,0:POSITION 0,0:REM SET FI
RST SCREEN
VI 1060 POKE 07,2:IF #6,"
[?] "
LC 1070 ? #6," rate beers 1 to 9"
TO 1080 POKE 07,0:POSITION 4,4
UM 1110 ? "Poor Average F
ine"
RA 1120 ? "
VP 1130 ? " 1 2 3 4 5 6 7
0 9"?
TW 1140 ? " (Enter +5+ if not fast
ed)"
SC 1150 POKE 05,2:POSITION 14,12:IF #6,"BE
ER +0+ - ?"
NP 1160 ? 17 ? 17 ? " (Push Spacebar t
o see results)"
Y0 1170 GOSUB 2010
AC 1200 GOSUB 2110:A=K-40:POSITION 30,12:
? "G":GOSUB 2010
OM 1210 GOSUB 2110:B=K-40:POSITION 30,12:
? "G":GOSUB 2010
FM 1220 GOSUB 2110:C=K-40:POSITION 30,12:
? "G":GOSUB 2010
IG 1230 GOSUB 2110:D=K-40:POSITION 30,12:
? "G":GOSUB 2010
OI 1240 GOSUB 2110:E=K-40
NO 1300 REM * SET SECOND SCREEN
HP 1305 ? "K":POSITION 0,0
BN 1310 POKE 07,2:IF #6,"
[?] "
SE 1315 ? #6," YOUR RATINGS ARE:"
ON 1320 POKE 07,0:POSITION 0,3
KM 1330 ? " BEER +A+ = "A:"
NA 1340 ? " "17 BEER +B+ = "B:"
PR 1360 ? " "17 BEER +C+ = "C:"
SI 1380 ? " "17 BEER +D+ = "D:"
TX 1400 ? " "17 BEER +E+ = "E:"
ON 1410 POKE 05,2:POSITION 11,12:IF #6,"
CORRECT? 0:00"
MS 1430 GET #1,K:IF K<0 THEN 1015
UN 1440 BA=BA+A:BB=BB+B:BC=BC+C:BD=BD+D:B
E=BE+E:NUM=NUM+1
YM 1450 CLOSE #2:OPEN #2,0,0,"D:BEERDATA"
17 ? #2,BA:17 ? #2,BB:17 ? #2,BC:17 ? #2,
BD:17 ? #2,NUM:CLOSE #2:REM SAVE DATA
Y0 1500 REM SET THIRD SCREEN
KP 1510 POKE 0L+21,2:POKE 0L+22,2:IF "K":P
OSITION 0,0
SC 1520 POKE 07,2:IF #6,"
[?] "
TA 1530 ? #6," N = "NUM
YN 1540 POKE 07,0:POKE 02,0:POSITION 0,3
NG 1550 ? "BUSCH 4":L=BB:GOSUB 22
05:REM BEER B
SJ 1560 ? " 1"
FT 1570 ? "BLACK LABEL 4":L=BD:GOSUB 22
05:REM BEER D
SP 1580 ? " 1"
MT 1590 ? "MILLER 4":L=BE:GOSUB 22
05:REM BEER E
RT 1600 ? " 1"
FC 1610 ? "MEISTER BRAU 4":L=BA:GOSUB 22
05:REM BEER A
RZ 1620 ? " 1"
FI 1630 ? "PABST LIGHT 4":L=BC:GOSUB 22
05:REM BEER C
OU 1640 ? "
LL 1650 ? " 1 2 3 4 5 6
7 8 9"
ZH 1670 ? " Average 5 co
re"
PB 1680 ? 17 ? 17 ? " (Press Spacebar to e
nter data)"
NN 1700 GET #1,K:IF K<0 THEN 1015
VJ 1800 REM SHOW SCORE ROUTINE
IO 1810 TRAP 4000:TRAP 1510
TR 1820 L=BB:POSITION 33,3:GOSUB 2310
NG 1830 L=BD:POSITION 33,5:GOSUB 2310
YM 1840 L=BE:POSITION 33,7:GOSUB 2310
VZ 1850 L=BA:POSITION 33,9:GOSUB 2310
LU 1860 L=BC:POSITION 33,11:GOSUB 2310
RF 1870 GOTO 1700
AD 2000 REM GET KEY SUBROUTINE
JU 2010 GET #1,K:IF K=52 THEN POP 1
500
KM 2020 IF K<49 OR K>57 THEN ? CHR$(253):
GOTO 2010
AJ 2030 RETURN
ZO 2100 REM ENTER DATA SUBROUTINE
VU 2110 POSITION 35,12:IF K=40:SOUND 0,40,
10,14:FOR T=1 TO 50:NEXT T:SOUND 0,0,0,
0:POSITION 35,12:IF "?:RETURN

```

```

OT 2200 REM GRAPHING SUBROUTINE
CO 2205 IF NUM=0 THEN ? :RETURN
AF 2210 LE=INT((CL/NUM)*3)
OV 2220 IF LE=3 THEN ? "":RETURN
EY 2230 FOR N=4 TO LE ? "":NEXT N ? "":
:RETURN
OA 2300 REM SCORE FORMAT SUBROUTINE
GO 2310 ? "(":
RV 2320 LE=CL/NUM+5.0E-03
ZF 2330 S5=STR$(LE)
EA 2340 IF LEN(S5)>3 THEN ? S5(1,4):GOTO
2390
HB 2350 IF LEN(S5)=3 THEN ? S5(10):
XA 2360 IF LEN(S5)=1 THEN ? S5(1,00):
PM 2390 ? "):":RETURN
ZY 10000 REM CHARACTER SET SUBROUTINE
GJ 10010 POKE 100,PEEK(100)-5:GRAPHICS 0:
CHSET=(PEEK(100)+1)*256:? :? "NONE HOME
NT: ALTERING CHARACTER SET"
MB 10015 CH=CHSET/256:CL0=0:POKE 203,CL0
:POKE 204,CH
AM 10020 DIM NFR$(20):RESTORE 10030:FOR N
=1 TO 20:READ ML:NFR$(N,N)=CHR$(ML):NE
XT N
BS 10030 DATA 104,109,0,133,205,168,169,2
24,133,206,177,205,145,203,200,200
OA 10040 DATA 249,230,204,230,206,165,206
,201,228,200,239,96
AK 10050 NFR=USR(NFR$(N))
FO 10060 RESTORE 10100
F5 10070 READ A:IF A=-1 THEN RETURN
OL 10080 FOR Z=0 TO 7:READ J:POKE CHSET+A
*8+Z,J:NEXT Z
AM 10090 GOTO 10070
CR 10100 DATA 1,124,124,56,56,16,16,56
OU 10110 DATA 3,127,64,64,64,64,127,12
7
KF 10120 DATA 4,224,32,62,35,33,33,225,22
5
MW 10130 DATA 5,127,127,127,127,127,127,1
27,255
ON 10140 DATA 6,225,254,224,224,224,224,2
24,240
YH 10150 DATA 7,31,16,16,0,15,15,15,7
JH 10160 DATA 10,240,16,16,32,224,224,224
,192
YJ 10170 DATA 11,36,36,36,0,0,0,0,0
VJ 10180 DATA 59,7,7,3,3,1,1,31
EE 10190 DATA 61,192,192,120,120,120,0,0
,240
EO 10200 DATA -1

```

multiple graphics modes on one screen

MODE MIXER 1

Article on page 38

LISTING 1

```

AZ 1 REM MODE MIXER
SK 2 REM BY KARL E. WIEGERS
OK 3 REM ANTIC MAGAZINE
VE 10 DIM INC(16),MODE(16),LINE$(16),SLPE
R(16),OPER(16),BAS(16)
JT 12 DIM BS(20),FNAME$(14),AS(100),OL$(3
9)
RJ 15 BL$(1)=" " :BL$(39)=BL$(16)*2=BL$
AL 20 FOR I=2 TO 15:READ A:SLPER(I)=A:NEX
T I:DATA 0,10,0,16,0,16,0,4,4,2,1,2,1,
1
WM 25 FOR I=2 TO 15:READ A:OPER(I)=A:NEXT
I:DATA 40,40,40,40,20,20,10,10,20,20,
20,40,40,40
MO 30 FOR I=2 TO 15:READ A:BAS(I)=A:NEXT
I:DATA 0,0,0,0,1,2,3,4,5,6,7,7,0,0
XM 39 REM Display List Interrupt Routine
IB 40 FOR I=0 TO 19:READ A:POKE 1771+I,A:
NEXT I
HW 50 DATA 72,130,72,169,0,162,20,141,10,
212,141
ZZ 60 DATA 23,200,142,24,200,104,170,104,
64
UM 70 OFF=4000:ND=500:MEMORY=550:LOCS=60
:SPACE=625
OO 80 OPEN #1,4,0,"K:"
FA 99 REM Menu
LH 100 GRAPHICS 0:POKE 752,1:POKE 559,0:P
OKE 710,0:POKE 709,90:POKE 711,198:GOS
UB LOCS
GN 110 RESTORE 120:FOR I=1 TO 25:READ A:P
OKE OL+I*2,A:NEXT I
OV 120 DATA 71,0,0,7,6,6,2,2,2,2,2,2,2,
2,2,2,2,2,6,6,6,6,65
CE 130 POKE OL+4,LHMEM:POKE OL+5,HMEM:POKE
559,34
LC 135 POKE 07,2
PI 140 POSITION 5,0:? #61:"Mode CE22"
KK 145 POKE 07,1:BYTE=40:GOSUB MEMORY
PH 150 POSITION 1,0:? #6:"PICK AN OPTION:
"
LV 155 POKE 07,0:BYTE=40:GOSUB MEMORY:POK
E 02,6
JA 160 POSITION 6,1:? "1 - CREATE A NEW 0
ISPLAY"
OC 161 ? :? "2 - CHANGE THE CURRENT DISPL
AY"
TJ 162 ? :? "3 - SEE THE CURRENT DISPLAY"
MH 163 ? :? "4 - SHOW CURRENT DISPLAY ON
DISK"
GO 164 ? :? "5 - LOAD A DISPLAY FROM DISK
"
ZA 165 ? :? "6 - DONE WITH THIS PROGRAM"
IS 170 POKE 02,2
PH 175 POKE 07,1:BYTE=560:GOSUB MEMORY
SN 180 POSITION 7,0:? #6:"?"
AJ 190 GET #1,CH:CH=CH-40
XV 200 POSITION 9,0:? #6:CH
NT 210 IF CH<1 OR CH>6 THEN GOSUB NO:? #6
:? #6:" enter only 1-6":GOTO 190
ZR 220 ON CH GOTO 1000,2000,6000,7000,300
0
KN 230 GRAPHICS 0:ENO
UM 500 FOR I=1 TO 15:SOUND 0,96,10,10:NEK
T I
VU 510 FOR I=1 TO 15:SOUND 0,120,10,10:NE
XT I
RF 520 SOUND 0,0,0,0:RETURN
OR 550 HMEM=256*HMEM+LHMEM+BYTE:LHMEM=HMEM-
256*INT(HMEM/256):HMEM=INT(HMEM/256)
AK 560 POKE 00,LHMEM:POKE 09,HMEM:RETURN
UH 600 OL=PEEK(560)+256*PEEK(561):LHMEM=PE
EK(00):HMEM=PEEK(09)
YB 610 HMEM=HMEM+256+LHMEM:RETURN

```

continued on next page

```

5F 625 POKE 752,1:POSITION 7,23:?"PRESS
    8000:?" TO CONTINUE":
NH 630 GET #1,A:IF A<32 THEN 630
2H 635 RETURN
NH 900 POKE 0L+24,130
NH 930 POKE 512,235:POKE 513,6:POKE 54200
    ,192
IO 940 ? " SEG. MODE = LINES SCAN LINE
    5 LEFT"
2V 950 ? "
    "
NH 960 ? " -- -- -- 192"
VK 970 POKE 703,4:RETURN
NH 999 REM Create a New Display
OU 1000 GRAPHICS 0:FOR I=1 TO 16:MODE(I)=
    0:LINES(I)=0:NEXT I
JH 1005 POKE 752,1:LEFT=192:NSEG=0:POKE 1
    536,0:F=0
UH 1010 POKE 1777,20:GOSUB 900
GH 1020 CH=NSEG+1:IF CH=17 THEN GOSUB SPA
    CE:GOTO 100
VH 1030 GOSUB 1040:NSEG=NSEG+1:GOTO 1020
MH 1040 ? I?"Enter graphics mode for seg
    ment ":CH:
OF 1045 TRAP 1070:INPUT GRA:IF GRA=0 THEN
    100
BK 1050 IF GRA>1 AND GRA<16 THEN 1000
RK 1055 GOTO 1070
VN 1060 POP :TRAP OFF:IF NSEG>0 THEN 100
OE 1065 GOTO 100
OG 1070 GOSUB NO:?"MODE=235":GOTO 10
    40
OF 1080 ? "How many mode lines ":TRAP 11
    00:INPUT NUM
AR 1085 IF NUM=0 THEN NSEG=NSEG-1:RETURN
OM 1090 IF NUM>0 AND NUM<=LEFT/SLPER(GRA
    3) THEN TRAP OFF:GOTO 1110
OE 1100 GOSUB NO:?"LEFT=192":INT(LEFT/
    SLPER(GRA)):GOTO 1000
KH 1110 MODE(CH)=GRA:LINES(CH)=NUM:LEFT=L
    EFT-NUM*SLPER(GRA)
PG 1120 POSITION 4,2+CH:?"MODE:POSITION
    10,2+CH:?" #6:GRA
YI 1125 POSITION 10,2+CH:?" #6:NUM
SI 1130 POSITION 20,2+CH:?" #6:LEFT
AN 1140 RETURN
YI 1999 REM Change Current Display
YY 2000 GRAPHICS 0:IF NSEG=0 THEN GOSUB N
    O:POSITION 0,5:?"MODE=235":GOTO 1000
CT 2005 POKE 1777,200:GRAPHICS 0:POKE 752
    ,1:GOSUB 900:F=0
ZR 2010 LEFT=192:FOR I=1 TO NSEG
OR 2020 POSITION 4,2+I:?"MODE:POSITION 10
    ,2+I:?" #6:MODE(I)
HM 2030 POSITION 10,2+I:?" #6:LINES(I)
EG 2040 LEFT=LEFT-LINES(I)*SLPER(MODE(I))
    :POSITION 20,2+I:?" #6:LEFT:NEXT I
CC 2050 ? I?"Enter segment number to cha
    nge ":
RY 2055 TRAP 2100:INPUT CH:IF CH=0 THEN 1
    00
ZG 2060 IF CH>16 THEN 2000
SR 2062 IF CH<1 OR CH>NSEG+1 THEN 2100
VV 2065 LEFT=LEFT+LINES(CH)*SLPER(MODE(CH
    3)
CR 2070 IF CH>NSEG+1 THEN 2100
RC 2080 IF LEFT=0 OR NSEG=16 THEN GOSUB N
    O:?"MODE=235":GOTO 2050
LE 2090 IF CH=NSEG+1 THEN 2110
VH 2100 GOSUB NO:?"MODE=235":NSEG
    +1:(LEFT=0):GOTO 2050
OU 2110 GOSUB 1040:NSEG=CH-(NUM=0):GOTO 2
    170
NH 2150 GOSUB 1040:IF NUM=0 THEN 2170
NH 2155 IF NSEG=0 THEN POSITION 2,3:?" #6:
    0L5(4):GOTO 2050
OG 2157 IF NSEG=15 THEN POSITION 2,10:?" #
    6:0L5(4):GOTO 2050

```

```

NY 2160 FOR I=CH+1 TO NSEG+1:LINES(I)=L
    INES(I):MODE(I)=MODE(I):NEXT I
DL 2165 LINES(NSEG+1)=0:MODE(NSEG+1)=0
DS 2170 LEFT=192:FOR I=1 TO NSEG:LEFT=LEF
    T-LINES(I)*SLPER(MODE(I))
OM 2180 POSITION 4,2+I:?" #6:I:POSITION 10
    ,2+I:?" #6:MODE(I):" "
IK 2185 POSITION 10,2+I:?" #6:LINES(I):"
    "
VH 2195 POSITION 20,2+I:?" #6:LEFT:" "INE
    NT I
2S 2198 ? #6:0L5(4):GOTO 2050
CG 2999 REM Load Display from Disk
MW 3000 GRAPHICS 0:POKE 710,16
KT 3010 POKE 02,2:?" DISPLAYS STORED
    ON THIS DISK"
SG 3020 TRAP 3060:I=0:OPEN #4,6,0,"#05
    .pr"
HS 3030 INPUT #4,A5:I=I+1
EI 3040 POSITION 6,3+I
2M 3050 ? A5(3,10):GOTO 3030
FG 3060 CLOSE #4:I=I-1:TRAP OFF
PJ 3070 IF I=0 THEN GOSUB NO:POSITION 7,6
    :?"MODE=235":GOTO 1000
FE 3080 POSITION 6,4+I:?" 0L5
VK 3090 POSITION 2,10:?"LOAD what displa
    y #:" ? "CO TO RETURN TO MENU"
50 3100 POSITION 21,10:INPUT A5:IF A5="0"
    THEN 100
NO 3110 IF A5="" THEN GOSUB NO:GOTO 3100
NO 3120 FNAME$="0":FNAME$(3)=A5
TO 3130 FNAME$(LEN(FNAME$)+1)="0,05P"
YE 3140 ? CHR$(125):"LOADING "FNAME$:"..
    ."
CM 3150 TRAP 3160:OPEN #4,4,0,FNAME$:NSEG
    =0:TRAP OFF:GOTO 3180
MG 3160 GOSUB NO:?"MODE=235":GOTO 3160-E
    RROR":PEEK(195):GOSUB SPACE
AU 3170 TRAP OFF:CLOSE #4:GOTO 3000
RO 3180 FOR I=1 TO 20:INPUT #4,A5
PN 3190 IF A5(4,7)="POKE" OR A5(5,0)="POK
    E" THEN NSEG=NSEG+1
U2 3200 IF A5(7,9)="END" THEN INPUT #4,A5
    ,A5:POP :GOTO 3220
EY 3210 NEXT I
UI 3220 FOR I=1 TO 16:MODE(I)=0:LINES(I)=
    0:NEXT I
GL 3230 J=12:CT=-6
LF 3240 05=""INPUT #4,A5:IF A5(7,10)="PO
    KE" THEN 3290
OK 3250 IF A5(3,7)="" THEN POKE 1542+CT,
    VAL(05):CT=CT+1:05=""GOTO 3270
OU 3260 05$(LEN(05)+1)=A5(3,7)
TO 3270 J=J+1:IF J>LEN(05) THEN POKE 1542
    +CT,VAL(05):CT=CT+1:J=12:GOTO 3240
R2 3280 GOTO 3250
PZ 3290 CLOSE #4
TO 3300 05MODE=PEEK(1539):-64
VV 3310 FOR I=2 TO 15:IF 05MODE=I THEN 33
    30
FO 3320 NEXT I
CT 3330 POP :MODE(I)=I:LINES(I)=1:J=6:Y=1
MR 3340 J=J+1:05MODE=PEEK(1535+J)
UT 3350 IF 05MODE=65 THEN 2000
NF 3360 IF 05MODE<65 THEN 05MODE=05MODE-6
    4:J=J+2
LO 3370 IF 05MODE=MODE(Y) THEN LINES(Y)=L
    INES(Y)+1:GOTO 3340
TP 3380 FOR I=2 TO 15:IF 05MODE=I THEN 34
    00
FY 3390 NEXT I
OE 3400 POP :Y=Y+1:MODE(Y)=I:LINES(Y)=1:G
    OTO 3340
5H 5999 REM See the Current Display
OO 6000 GRAPHICS 0:IF NSEG=0 THEN 2000
OY 6010 POKE 02,6:?" ? "The screen will
    1 be black:?" briefly while your disp
    lay"

```

```

IH 8820 ? "is created."
EP 6040 ? :? "Press any key when you are"
: ? "done viewing the display."
YY 6050 GOSUB SPACE:POKE 82,2
EJ 6100 DATA 0,0,7,6,5,0,0,0,1,4,0,2,3
KJ 6110 RESTORE 6100
TZ 6120 READ MAX:FOR I=1 TO NSEG:IF 0A5(M
MODE(I))-MAX THEN POP :GOTO 6140
FF 6130 NEXT I
UO 6140 GRAPHICS:MAX:POKE 752,1:GOSUB LOC
5:POKE 559,0
MP 6145 FOR I=0 TO 16:INC(I):B:MENT I
NE 6150 FOURK=INT(MEM/4096+1):4096
GX 6160 POKE 1536,112:POKE 1537,112:POKE
1538,112
UX 6170 POKE 1539,64+MODE(I)
PR 6180 POKE 1540,LMEM:POKE 1541,HMEM
GE 6185 CT=0
LJ 6190 FOR I=1 TO NSEG:TRAP 6200
UZ 6195 IF I=1 AND LINES(I)=1 THEN 6200
LA 6200 FOR J=1 TO LINES(I):IF I=1 AND J=
1 THEN 6270
FP 6210 MEM=MEM+OPER(MODE(I)):IF MEM<=FOU
RK THEN 6260
MK 6220 FOURK=INT(MEM/4096+1):4096
OK 6230 POKE 1542+CT,INT(MEM/256):CT=CT+1
:6070 6270
GO 6240 Y=MEM-256:INT(MEM/256):POKE 1542+
CT,Y:CT=CT+1:INC(I):Y
RO 6250 POKE 1542+CT,INT(MEM/256):CT=CT+1
:6070 6270
ZL 6260 POKE 1542+CT,MODE(I):CT=CT+1
GE 6270 NEXT J
ND 6280 NEXT I:TRAP OFF
NV 6290 POKE 1542+CT,65
LO 6300 POKE 560,0:POKE 561,0:POKE 559,34
NG 6310 DATA 100,01,64,53,53,64
UY 6320 RESTORE 6330:FOR I=1 TO 6:READ Y:
FOR J=1 TO 5:SOUND 0,Y,10,0
II 6330 NEXT J:NEXT I:SOUND 0,0,0,0
CR 6340 GET #1,0
EO 6370 IF F=1 THEN GRAPHICS 0:GOTO 7070
OE 6380 F=1:GOTO 100
ZO 6390 REM Save Display on Disk
OR 7000 GRAPHICS 0:IF NSEG=0 THEN 2000
GC 7010 ? "Enter a key for this display:
"? :("0 TO RETURN TO MENU)"
ZE 7020 POSITION 10,4:INPUT A$
OF 7030 IF A$="0" THEN 100
FO 7040 FNAME$="0:"FNAME$(LEN(FNAME$)+1)
-A$
TJ 7050 FNAME$(LEN(FNAME$)+1)="D5P"
NO 7060 IF F=0 THEN F=1:GOTO 6000
JO 7070 ? :? "Storing "FNAME$:" on disk.
....
ZI 7080 TRAP 7500:OPEN #4,0,FNAME$
CY 7100 ? #4:"10 GOSUB 30000:LWEM=PEEK(00)
:HMEM=PEEK(09)":"LN=20
VI 7110 FOR I=1 TO NSEG
JB 7120 ? #4:LN:" POKE 07,"#45(MODE(I))-
(MODE(I)=14):
FY 7130 IF I=1 THEN ? #4:"":GOTO 7165
OC 7140 BYTE=LINES(I)-1)*OPER(MODE(I)-1)+I
NC(I)-1)
AY 7150 ? #4:"":BYTE="":BYTE:
PE 7160 ? #4:"":GOSUB 31000
YU 7165 LN=LN+10:NEXT I
CM 7170 ? #4:"29999 END"
EA 7200 ? #4:"30000 POKE 106,PEEK(106)-1:
OL=256+PEEK(106)
AC 7210 ? #4:"30010 GRAPHICS ":"MAX:"POKE
559,0"
EF 7230 LN=30020
FA 7240 ? #4:"30020 FOR I=0 TO ":"CT+6":"IR
EAO A:POKE OL+I,A:NEXT I"
EI 7250 FOR I=1 TO 11
RI 7260 LN=LN+10:I? #4:LN:" DATA "
KM 7270 FOR J=1 TO 19
PI 7280 A=PEEK(1535+20*(I-1)+J):? #4:I:

```

```

WI 7285 IF A=65 THEN ? #4:"":LN=LN+10:GOT
0 7340
GE 7290 ? #4:"":
FM 7300 NEXT J
KK 7310 ? #4:PEEK(1535+20*I)
FH 7320 NEXT I
OE 7340 ? #4:LN:" POKE OL+4,PEEK(00):POKE
OL+5,PEEK(09)":"LN=LN+10
UJ 7350 ? #4:LN:" POKE 560,0:POKE 561,OL/
256:POKE 559,34"
AZ 7370 ? #4:LN+10:" RETURN"
CK 7380 ? #4:"31000 HMEM=256+HMEM+LMEM+0Y
TE"
MF 7390 ? #4:"31010 LMEM=HMEM-256=INT(HME
M/256)"
MZ 7400 ? #4:"31020 HMEM=INT(HMEM/256)"
AF 7410 ? #4:"31030 POKE 00,LMEM:POKE 09,
HMEM:RETURN"
VN 7420 CLOSE #4:GOTO 100
LE 7500 GOSUB NO: ? :? "ANTIC MODE 3:GOTO
100"
OP 7510 CLOSE #4
LK 7520 GOSUB SPACE:GOTO 7800

```

LISTING 2

```

JO 10 GOSUB 30000:LWEM=PEEK(00):HMEM=PEEK
(09)
II 20 POKE 07,1
OI 30 POKE 07,0:BYTE=00:GOSUB 31000
NM 40 POKE 07,1:BYTE=160:GOSUB 31000
EU 50 POKE 07,0:BYTE=000:GOSUB 31000
IA 60 POKE 07,0:BYTE=160:GOSUB 31000
HE 70 POKE 07,5:BYTE=000:GOSUB 31000
CO 29999 END
UA 30000 POKE 106,PEEK(106)-1:OL=256+PEEK
(106)
GL 30010 GRAPHICS 0:POKE 559,0
NK 30020 FOR I=0 TO 63:READ A:POKE OL+I,A
:NEXT I
FH 30030 DATA 112,112,112,70,00,97,6,6,6,
2,2,2,2,14,14,14,14,14,14,14
MS 30040 DATA 14,14,14,14,14,14,14,14,
14,14,14,14,5,5,5,5,5,5,5,5
NA 30050 DATA 15,15,15,15,15,15,15,15,15,
15,15,15,15,15,15,15,15,10,10,10
MC 30060 DATA 10,10,10,65
RH 30070 POKE OL+4,PEEK(00):POKE OL+5,PEE
K(09)
VN 30080 POKE 560,0:POKE 561,OL/256:POKE
559,34
EJ 30090 RETURN
AE 31000 HMEM=256+HMEM+LMEM+0YTE
JH 31010 LMEM=HMEM-256=INT(HMEM/256)
CH 31020 HMEM=INT(HMEM/256)
FO 31030 POKE 00,LMEM:POKE 09,HMEM:RETURN

```

LISTING 3

```

EY 1 REM MINAOO.LST
YG 2 REM BY KARL HIEGERS
OK 3 REM ANTIC MAGAZINE
GH 15 POKE 752,1
TE 25 POSITION 2,1:I? #6:"GRAPHICS 1 (ANTIC
C 61)"
SN 35 POSITION 2,1:I? #6:"THIS IS Graphics
Mode 0 (ANTIC 2)"
YU 45 COLOR 1:PLOT 0,0:ORANTO 159,19
OH 46 COLOR 2:PLOT 0,19:ORANTO 159,0
UH 47 COLOR 3:PLOT 0,9:ORANTO 159,9
ET 55 POSITION 14,2:I? #6:"ANTIC MODE 5"
MP 65 COLOR 1:PLOT 0,0:ORANTO 319,19
KH 66 PLOT 0,19:ORANTO 319,0
OY 67 PLOT 0,9:ORANTO 319,9
CY 75 COLOR 1:PLOT 0,0:ORANTO 79,5
OC 76 COLOR 2:PLOT 0,5:ORANTO 79,0
OR 77 COLOR 3:PLOT 0,3:ORANTO 79,3

```


MANIPULATING STRINGS

Article on
page 32.

LISTING 1

```

RC 10 REM UTABLE1.BAS
VN 20 REM BY BRIAN Z. WEISS
RN 30 REM ANTIC MAGAZINE
BB 40 REM
GJ 50 REM REMARKS MAY PRECEDE THE DIM STATEMENT
PV 60 DIM AS(20):DIM TESTS(40)
PI 70 REM DIM TWO STRING VARIABLES IN TABLE
IO 80 AS="HELLO":AS(5,5)="E":REM FOR DEMONSTRATION PURPOSES
OI 100 GOSUB 1000
OA 150 END
ON 200 REM
IC 210 REM THIS SUBROUTINE CAN BE APPENDED TO ANY PROGRAM FOR A LIST OF VARIABLES
OR 220 REM
MV 1000 GOSUB 2000
OK 1010 VUTP=PEEK(130)+256*PEEK(131):REM START ADDRESS OF VARIABLE NAME TABLE
SN 1030 VUTE00=PEEK(132)+256*PEEK(133)-1:REM E00 ADDRESS OF VARIABLE NAME TABLE
WD 1050 FOR N=VUTP TO VUTE00
TY 1060 BYTE=PEEK(N):REM CONTENTS OF LOCATION N
XV 1070 IF BYTE<129 THEN CHR$(BYTE):GO TO 1150:REM PART OF VARIABLE NAME
NM 1085 LNCOUNT=LNCOUNT+1
FB 1090 IF BYTE=128=36 THEN POSITION 30,LNCOUNT:? "STRING":GOTO 1150
FO 1100 IF BYTE=128=40 THEN POSITION 30,LNCOUNT:? "ARRAY":GOTO 1150
KR 1110 ? CHR$(BYTE-128):? POSITION 30,LNCOUNT:? "NUMERIC"
TN 1130 IF LNCOUNT<20 THEN 1200
SD 1160 ? :? "PRESS ANY KEY TO CONTINUE":POKE 764,255
YP 1170 IF PEEK(764)=255 THEN 1170
LZ 1180 POKE 764,255:GOSUB 2000
MK 1200 GOTO N:RETURN
OO 2000 GRAPHICS 0:?"VARIABLE NAME":POS ITION 30,0:?"TYPE"
OL 2005 ? "-----"
-----:"POSITION 2,3:LNCOUNT=2:RETURN

```

LISTING 2

```

ND 10 REM UTABLE2.BAS
VN 20 REM BY BRIAN Z. WEISS
RN 30 REM ANTIC MAGAZINE
BB 40 REM
GJ 50 REM REMARKS MAY PRECEDE THE DIM STATEMENT
PV 60 DIM AS(20):DIM TESTS(40)
PI 70 REM DIM TWO STRING VARIABLES IN TABLE
IO 80 AS="HELLO":AS(5,5)="E":REM FOR DEMONSTRATION PURPOSES
OI 100 GOSUB 1000
OA 150 END
MV 1000 GOSUB 2000
VS 1010 VUTP=PEEK(134)+256*PEEK(135):REM START ADDRESS OF VARIABLE VALUE TABLE
NM 1030 VUTEND=PEEK(136)+256*PEEK(137):RE

```

```

M END ADDRESS OF VARIABLE VALUE TABLE
XN 1050 FOR N=VUTP TO VUTEND STEP 8
TY 1060 BYTE=PEEK(N):REM CONTENTS OF LOCATION N
IC 1070 IF BYTE<129 THEN GOTO N:RETURN
NE 1075 LNCOUNT=LNCOUNT+1
AN 1076 IF LNCOUNT<20 THEN 1080
TR 1077 ? :? "PRESS ANY KEY TO CONTINUE":POKE 764,255
IE 1078 IF PEEK(764)=255 THEN 1078
NM 1079 POKE 764,255:GOSUB 2000:LNCOUNT=LNCOUNT+1
WK 1080 FOR I=N TO N+7:POSITION (I-N)*5+2,LNCOUNT:? PEEK(I):" ":NEXT I:?"NEXT N
BA 1090 RETURN
UU 2000 GRAPHICS 0:?"#1 #2 #3 #4 #5 #6 #7 #8":LNCOUNT=1:RETURN

```

LISTING 3

```

NS 10 REM UTABLE2B.BAS
VN 20 REM BY BRIAN Z. WEISS
RN 30 REM ANTIC MAGAZINE
BB 40 REM
GJ 50 REM REMARKS MAY PRECEDE THE DIM STATEMENT
PV 60 DIM AS(20):DIM TESTS(40)
PI 70 REM DIM TWO STRING VARIABLES IN TABLE
IO 80 AS="HELLO":AS(5,5)="E":REM FOR DEMONSTRATION PURPOSES
OI 100 GOSUB 1000
OA 150 END
MV 1000 GOSUB 2000
YI 1010 VUTP=PEEK(134)+256*PEEK(135)
VE 1015 STARP=PEEK(140)+256*PEEK(141):REM START ADDRESS OF VARIABLE VALUE TABLE
PS 1030 VUTE00=PEEK(136)+256*PEEK(137):REM E00 ADDRESS OF VARIABLE VALUE TABLE
XN 1050 FOR N=VUTP TO VUTEND STEP 8
TY 1060 BYTE=PEEK(N):REM CONTENTS OF LOCATION N
IC 1070 IF BYTE<129 THEN GOTO N:RETURN
NE 1075 LNCOUNT=LNCOUNT+1
AN 1076 IF LNCOUNT<20 THEN 1080
TR 1077 ? :? "PRESS ANY KEY TO CONTINUE":POKE 764,255
IE 1078 IF PEEK(764)=255 THEN 1078
NM 1079 POKE 764,255:GOSUB 2000:LNCOUNT=LNCOUNT+1
TY 1080 FOR I=N TO N+1:POSITION (I-N)*5+2,LNCOUNT:? PEEK(I):" ":GOTO I
NM 1090 ADD=PEEK(N+2)+256*PEEK(N+3)+PEEK(N+4)+256*PEEK(N+13)
EN 1100 LENGTH=PEEK(N+4)+256*PEEK(N+5)
TP 1110 MAN=PEEK(N+6)+256*PEEK(N+7)
EA 1120 POSITION 12,LNCOUNT:? ADD:POSITION 22,LNCOUNT:? LENGTH:POSITION 30,LNCOUNT:? MAN
MM 1130 GOTO N:RETURN
CO 2000 GRAPHICS 0:?"#1 #2 ADDRESS LENGTH DIMENSION":LNCOUNT=1:RETURN

```

LISTING 4

```
SE 10 REM VTABLE3.BAS
VM 20 REM BY BRIAN Z. WEISS
RM 30 REM ASCII MAGAZINE
RU 40 DIM A$(1)
LZ 50 REM SIZE WILL BE CHANGED LATER
IM 60 VUTP=PEEK(134)+256*PEEK(135)
RK 70 GRAPHICS 0:LIST:REM FOR DEMONSTRATE
100 PURPOSES
OP 100 OL=PEEK(560)+256*PEEK(561):SCRN=PE
EK(OL+4)+256*PEEK(OL+5)
PL 150 OFFSET=SCRN-PEEK(140)-PEEK(141)+25
6
FS 160 FOUR=107*(OFFSET/256)
SU 170 THREE=OFFSET-FOUR*256
UP 200 POKE VUTP+2,THREE:POKE VUTP+3,FOUR
MT 250 SIZE=400
JA 260 SIN=INT(SIZE/256)
OM 270 FIVE=SIZE-SIN*256
YC 280 POKE VUTP+4,FIVE:POKE VUTP+6,FIVE
RD 290 POKE VUTP+5,SIN:POKE VUTP+7,SIN
ES 400 A$=CHR$(0):A$(400)=CHR$(0):A$(2)=A
$
CG 420 A$(41,45)="X,/,/"
```

```
OK 430 FOR OEL=1 TO 500:WENT OEL
OZ 450 REM
LR 460 REM THIS ROUTINE SHOWS SOME USES F
OR A STRING LOCATED IN SCREEN MEMORY
SK 500 GRAPHICS 0
IO 510 A$=CHR$(0):A$(400)=A$:A$(2)=A$
MK 520 FOR B=1 TO 5:FOR A=34 TO 50
OU 530 A$=CHR$(A):A$(400)=A$:A$(2)=A$
KO 540 FOR OEL=B*10 TO 50:WENT OEL:WENT A
RJ 550 FOR OEL=1 TO 200:WENT OEL:WENT B
JW 560 FOR B=1 TO 2
IP 570 A$=CHR$(0):A$(400)=A$:A$(2)=A$
PN 580 A$(365,399)="Moving this string ar
ound is easy"
SU 585 A$(371,371)=CHR$(0):A$(376,376)=CH
R$(0):A$(383,383)=CHR$(0):A$(390,390)=
CHR$(0):A$(393,393)=CHR$(0)
UV 590 FOR OEL=1 TO 200:WENT OEL
JO 600 FOR A=364 TO 161 STEP -1:A$(A,A+34
)=A$(A+1,A+35):FOR OEL=B*10 TO 30:WENT
OEL:WENT A:WENT B:GRAPHICS 0:END
```

now you can save and edit your Info Bits files

SON OF INFO BITS

Article on page 45.

LISTING 1

```
UN 5 REM INFOBEN.BAS
IF 6 REM BY BOBBY BARTON
OO 7 REM ASCII MAGAZINE
NM 8 REM DELETE ENTRY ROUTINE AND UPGRADE
GV 9 REM FOR INFO BITS
LM 10 ? : ? : ? " Loading INFO BITS"
MH 15 GOSUB 2000
FY 20 POKE B2,0
RY 30 OPEN #2,12,0,"S:"
MZ 40 ? "M":DIM B$(100),R$(120),SEARCH$(1
20),RECORD$(120),S$(120)
UV 50 ? : ? : ? " INFO BITS"
ZS 60 TRAP 60: ? : ? " 1) ADD TO FILE 2)
SEARCH FOR ENTRY"
RH 61 ? " 3) DELETE/(EDIT) ENTR
Y"
NH 70 INPUT N
HO 80 ON N GOTO 110,200,300
LF 100 REM ADD TO FILES
SE 110 OPEN #5,9,0,"01:INFOBITS.FIL"
VS 120 ? : ? "TYPE ENTRY:"
CZ 125 INPUT M$185
LC 130 IF B$="" THEN CLOSE #3:GOTO 60
KF 140 ? #3:B$:GOTO 120
LG 200 REM SEARCH
PJ 205 OPEN #1,4,0,"01:INFOBITS.FIL"
ES 210 ? : ? "SEARCH FOR:"INPUT #5:SEARCH
$
MF 220 IF SEARCH$="ALL" THEN 1000
SL 230 GOSUB 500
OY 240 CLOSE #1:GOTO 60
YC 300 REM DELETE ENTRY
RC 310 ? "M"
HP 320 ? : ? "PRESS [F5] SEARCH FOR AN ENTR
Y [F6] DELETE/(EDIT) LA
ST ENTRY ABOVE [F7] ABORT"
AR 330 INPUT B$
RR 340 IF B$="A" THEN 60
```

```
RE 350 IF B$="S" THEN 450
YG 360 IF B$="D" THEN ? "++":GOTO 330
PJ 370 OPEN #1,4,0,"01:INFOBITS.FIL"
SS 380 OPEN #4,0,0,"01:INFOBITS.FIL"
BN 385 ? "M": ? : ? " I'm working on it": ?
: ?
TH 390 POKE 752,1:POKE 206,0:POKE 207,0:IN
=USR(1757):POKE 752,0
PC 400 ? : ? " [F5] ADD TO FILE [F6] DELETE ENTRY
[ABOVE] [F7] SEARCH FOR"
ZD 430 CLOSE #1:CLOSE #4
OT 435 ? : ? "EDIT/RE-ENTER DELETED ENTRY
ABOVE? [Y/N]"
EE 440 INPUT B$:IF B$="Y" THEN 60
UH 445 ? : ? "+++++X++":OPEN #3,9,0,"01:I
NFOBITS.FIL":POSITION 0,4: ? "EDIT ENTR
Y":GOTO 125
PG 450 OPEN #1,4,0,"01:INFOBITS.FIL"
FE 460 ? : ? "SEARCH FOR:"INPUT #5:SEARCH
$
SV 470 GOSUB 500
AL 480 CLOSE #1:GOTO 320
ZC 500 ? :POKE 752,1:POKE 206,0:POKE 207,
0:POKE 226,LE0(SEARCH$):H=USR(1536,ADR
(SEARCH$)):POKE 752,0:RETURN
AH 1000 REM ***** PRIOR ALL ENTRIES
OK 1010 TRAP 240
PJ 1020 INPUT #1:RECORD$: ? RECORD$:GOTO 1
020
OI 1030 INPUT #1,B$:RECORD$=B$(1,LE0(B$)
)
UK 1040 ? RECORD$:WENT N
EO 2000 FOR A=1536 TO 1791:READ B:POKE A,
B:WENT A
KL 2001 DATA 104,104,133,225,104,133,224,
162,16,32,168,6,162,16,32,104,6,32,06,
220,40,92,162,0,160
```

continued on next page

WD	2002 DATA	0.149,253.3,42.16,2.11,191.1,96.259,224.248,11.192,0.240,12.160,0.166,227.76,55.6
CR	2003 DATA	2000,196.226,176.165,232,236,0.0,3.176,287.192,0.200,217.134,227.76,2.6,6.32,26.76,12
HF	2004 DATA	6.162,32.169,9.157,66.3,32.190,6.165,84.201,120.176,23.169,253.157,0.0,3.169,3.157
RY	2005 DATA	69.3,32.06,228.165,206.133,2.00,103,287.133,209.96,96.169,156.157,6.0,3.169,6.157,69.3
EB	2006 DATA	32.00,228.173,252.2,201,255.2,20.249,169.255,141,252.2,169.166,157.60,3.169,6.157,69.3
MY	2007 DATA	32.06,228.76,76.6,160.193,20.6,217,160,203,197,217,160,155,125,155.169,5.157,66.3,169,253
FL	2008 DATA	157.60,3.169,3.157,69.3,96.2,56,206,208,2.230,207.169,122.157,72.3.169,0.157,73.3
NP	2009 DATA	96.104,162.64,169.9,157.66,3.169,3.157,69.3,96.2,56,206,208,2.230,207.169,122.157,72.3.169,0.157,73.3

```
.32,173.6,162,16.52,168,6,162,16,32,10  
4.6,32,06,220  
JZ 2018 DATA 40,143,165,206,197,200,200,1  
2,165,207,197,209,200,6,32,76,6,76,217,  
6,162,64,32,190,6  
RC 2011 DATA 32,06,228,76,217,6  
CQ 2012 OPEN 45,4,0,RE,I,DEPTDUM
```

LISTING 2

```

10 10 REM INFOREQ.885
PY 20 REM PY ANY BARTON
EN 30 REM ANTIC MAGAZINE
50 40 DIM IN$(131),OUT$(122)
50 50 OPEN #1:4,0,"01:INFO8IY$.FIL"
UK 60 OPEN #2:5,0,"01:INFO5IY$.FIL"
KI 70 TRAP 100
NW 80 INPUT #1:IN$(IN$)-IN$(11.LEN(IN$))
ZM 90 ? #2:OUT$(OUT$)
KR 100 CLOSE #1:CLOSE #2:END

```

Extra-convenient menu program

LAZY LOADER

Article on page 15

LISTING 1

[illegible]

```

JU 170 7 CHR$(I+120):CHR$(190):09(3):NEXT
I
SF 100 FOR I=97 TO 122
CO 190 INPUT #2:ID5
FU 200 IF D$(1,1,13)="5Y5" OR D$(1,1,13)="E
NE" OR D$(1,1,13)="08J" OR D$(1,1,13)="D
AT" THEN 190
DA 210 IF D$(4,7)=*"FRE" OR D$(5,8)=*"FRE
" THEN POP I:GOTO 270
IF 220 IF I=105 THEN POKE 82,8:POSITION 0
,5:7 M3:POKE 82,26:POSITION 26,5
CG 230 IF I=122 THEN 250
AG 240 7 CHR$(I+120):CHR$(190):09(3)
DA 250 NEXT I:I=I-1:IF D$(4,7)=*"FRE" OR
D$(5,8)=*"FRE" THEN 270
5P 260 POSITION 12,22:7 "More files..."C
LOSE #2:TRAP 40000:POKE 82,0:I=I-1:RET
URN
NC 270 CLOSE #2:TRAP 40000:POKE 82,0:I=I-
1
50 280 POSITION 12,22:7 05:IF D$(5,5)=*
" THEN 7 "T":
ZD 290 7 "0R5":RETURN:REM CHANGE '0R5'
TO 'K5' FOR 005 3
LT 300 GRAPHICS 0:POKE 752,1:POKE 710,192
:POKE 709,198:POKE 712,192
L0 381 GOSUB 781:GOSUB 110
UA 302 POKE 694,0:IF PEEK(782)=120 THEN P
OKE 702,64
VL 303 GOSUB 70
YC 304 POKE 764,255:FLG=1
FO 305 IF PEEK(764)=255 THEN 305
MC 306 IF PEEK(764)=124 OR PEEK(764)=60 T
HEN POKE 702,(PEEK(764)-60):GOSUB 701G
OTO 304
NU 307 M=PEEK(764):IF M>63 THEN M=M-64:FL
G=0
DU 308 IF PEEK(782)=64 THEN FLG=0
MV 309 IF PEEK(764)=12 THEN RUN
UG 310 FOR M=1 TO 64:IF CHR$(M)<>CHR$(M)

```


enhanced dot-by-dot picture dissolves

FADER II

Article on page 57.

LISTING 1

```

ZS 10 REM FADERII.BAS
OB 20 REM BY PATRICK OELL'ERA
RH 30 REM ANTIC MAGAZINE
ZV 40 CLR :DIM FMS(20),TEMPS(20),ARS(93)
KI 50 CLOSE #1:GRAPHICS 0:17:17:17:ITRAP 4
      #####POKE 710,90
VM 60 ? "1. Insert a DOS 2.0 disk?" : ? "
      into your drive."
JJ 70 ? : ? "2. Type in the filename of th
      e": ? " resulting object file.": ? : IN
      PUT FMS
MH 80 TRAP 150
FA 90 IF LEN(FMS)<3 THEN 110
OK 100 IF FMS(1,1)="D" AND (FMS(2,2)=":
      OR FMS(3,3)="") THEN 140
BP 110 TEMPS(1,2)="0":TEMPS(3)=FMS:FMS=T
      EMPS
PS 120 TRAP 130:OPEN #1,4,0,"0:005.5V5":C
      LOSE #1:GOTO 140
CC 130 ? : ? "***** A DOS 2.0 disk?": ?
      OR #1 TO 250:NEXT K:GOTO 50
WK 140 TRAP 150:OPEN #1,8,0,FMS:CLOSE #1:
      GOTO 170
GJ 150 ? : ? "***** FILENAME *****":FOR K=
      1 TO 250:NEXT K:GOTO 50
KJ 170 ? : ? "***** ARS *****":
      #####:FLAG=0:TRAP 182
UG 100 RESTORE :READ LN:C=1:DIM AS(LN)
ET 101 TRAP 230:GOTO 190
IR 182 FLAG=1:POKE 712,4:OPEN #1,8,0,FMS
      OR 190 ARS="":READ ARS
JK 200 FOR K=1 TO LEN(ARS) STEP 3
      215 IF FLAG THEN PUT #1,VAL(ARS(K,K+2)
      ):NEXT K:TRAP 200:GOTO 190
HO 220 AS(C,C)=CHR$(VAL(ARS(K,K+2))):C=C+
      1:NEXT K:GOTO 190
KH 230 NUMHI=INT(LN/256):NUMLO=LN-NUMHI*2
      56
AT 240 OPEN #1,8,0,FMS
UA 250 AD=ADR(ARS):ADHI=INT(AD/256):ADLO=0
      0:ADHI*=256
RK 260 IO=040:POKE IO+2,11:POKE IO+4,ADLO
      :POKE IO+5,ADHI:POKE IO+8,NUMLO:POKE IO
      +9,NUMHI
TK 270 K=USR$(ADR("###NLSV$"),163)
TV 280 CLOSE #1:POKE 712,0: ? "*****
      *****"
OM 1000 DATA 900
OF 1002 DATA 25525500006622510620020492352
      24076000063169255133224032002062168224
      274026240030224013240009224
MY 1004 DATA 007200025913323400760010621332
      05032002062133206052002062133207032002
      062133200032002062133204076
LN 1006 DATA 0110621690001332361332301650
      001332241332201650009133225133229032000
      063072162000154227041120133
MZ 1008 DATA 2351040411271332262000100320
      00063133227032000063133226190226165235
      200042032000063133235076150
TK 1010 DATA 062190226169255197226002451
      90227169255197226002372240195190226169
      255197226200000190227169255
KF 1012 DATA 1972272401790320000631332331
      69002197234240002240209165233160000145
      224024169000101224133224169
UO 1014 DATA 0001012251332252302301690961
      97230200047169001197236200024024169001
      101228133220133224169000133
MO 1016 DATA 2361332301012291332291332250
      76240062230236024169040101228133224169
      000133230101229133225165235
H2 1018 DATA 2401762001471652331600001452
      2425206224706323022420000230225165235
      240150200236162016169000157
CN 1020 DATA 0720031570730030320062200400
      01096104104076135005162016169012157006
      003076006220157069003152157
MF 1022 DATA 0600031690031570660030320062
      20040001096032029001300010000001000064
      002016120004032165000133120
GP 1024 DATA 1331301690001331071690071971
      071760010961661817690000141040032169254
      205400032144019130072174040
BA 1026 DATA 0321000430321041700321040632
      30040032076095063130072162255100043032
      104170032104063173011032040
EP 1028 DATA 0411641071920022000061052030
      0014119600019200320000061052030000141197
      002192002400006105203000141
AN 1030 DATA 19000021920052000051652041412
      00002230107076001063173009032133129173
      0100321331311690000141041032
NW 1032 DATA 1690292050410321760010961771
      20061063063200010109063063073255049150
      076226003017130145130230129
MP 1034 DATA 2301312321300410071702300410
      3207619906317300106214105240063243064
      06516200113400913420320742
LO 1036 DATA 0600021340005130157043052322
      0024914204003216925513313307040032072
      133132010176005070133076025
UZ 1038 DATA 06417301021003713319713322400
      02176245141042032170109043032168104072
      170109043032174042032157043
UO 1040 DATA 032104170521570430323008400
      3223020320019162090632031063169012157
      074003169000157043003160193
BE 1042 DATA 16900503203090631691201412000
      02173040002133120173049002133129160003
      169070145120160006169014145
TK 1044 DATA 1208001920092002471690701451
      202002002002471720201015200007169014145
      120200200243141010032165009
YM 1046 DATA 1410100321730100520562330321
      10900932173000905213000169001133100032
      029063169000157043003169000
GH 1048 DATA 157070003160141690050520390
      633132107165106197107144063162016169019
      157000003169032157069003169
CL 1050 DATA 02015702700051690001570730031
      69005157066003032006220040192230107200
      214032029063244064195005173
ON 1052 DATA 0200322010322001701620021091
      040651570100522020162723224000240007
      1090210322010322002417212029
PK 1054 DATA 0321690461570210321522321570

```

```

AC 398 DRVNUM=DRVNUM+1-(DRVNUM=52)*4
ON 400 GOTO 260
56 410 IF PEEK(764)=14 THEN WAIT=WAIT+1-(
WAIT=0)*256:GOTO 260
OY 420 WAIT=WAIT+1-(WAIT=255)*256
OM 430 GOTO 260
IV 440 POINT #2,SECTOR,BYTE:PWT #2,WAIT:P
UT #2,DRVNUM
TY 450 GRAPHICS #
KZ 460 CLOSE #2:CLOSE #1:POKE 82,2:POKE 7
52,0:END
FA 470 IF PEEK(195)=170 THEN POSITION 6.1
517 " "CONFIRMATION: 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000 1010 1020 1030 1040 1050 1060 1070 1080 1090 1100 1110 1120 1130 1140 1150 1160 1170 1180 1190 1200 1210 1220 1230 1240 1250 1260 1270 1280 1290 1300 1310 1320 1330 1340 1350 1360 1370 1380 1390 1400 1410 1420 1430 1440 1450 1460 1470 1480 1490 1500 1510 1520 1530 1540 1550 1560 1570 1580 1590 1600 1610 1620 1630 1640 1650 1660 1670 1680 1690 1700 1710 1720 1730 1740 1750 1760 1770 1780 1790 1800 1810 1820 1830 1840 1850 1860 1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100 2110 2120 2130 2140 2150 2160 2170 2180 2190 2200 2210 2220 2230 2240 2250 2260 2270 2280 2290 2300 2310 2320 2330 2340 2350 2360 2370 2380 2390 2400 2410 2420 2430 2440 2450 2460 2470 2480 2490 2500 2510 2520 2530 2540 2550 2560 2570 2580 2590 2600 2610 2620 2630 2640 2650 2660 2670 2680 2690 2700 2710 2720 2730 2740 2750 2760 2770 2780 2790 2800 2810 2820 2830 2840 2850 2860 2870 2880 2890 2900 2910 2920 2930 2940 2950 2960 2970 2980 2990 3000 3010 3020 3030 3040 3050 3060 3070 3080 3090 3100 3110 3120 3130 3140 3150 3160 3170 3180 3190 3200 3210 3220 3230 3240 3250 3260 3270 3280 3290 3300 3310 3320 3330 3340 3350 3360 3370 3380 3390 3400 3410 3420 3430 3440 3450 3460 3470 3480 3490 3500 3510 3520 3530 3540 3550 3560 3570 3580 3590 3600 3610 3620 3630 3640 3650 3660 3670 3680 3690 3700 3710 3720 3730 3740 3750 3760 3770 3780 3790 3800 3810 3820 3830 3840 3850 3860 3870 3880 3890 3900 3910 3920 3930 3940 3950 3960 3970 3980 3990 4000 4010 4020 4030 4040 4050 4060 4070 4080 4090 4100 4110 4120 4130 4140 4150 4160 4170 4180 4190 4200 4210 4220 4230 4240 4250 4260 4270 4280 4290 4300 4310 4320 4330 4340 4350 4360 4370 4380 4390 4400 4410 4420 4430 4440 4450 4460 4470 4480 4490 4500 4510 4520 4530 4540 4550 4560 4570 4580 4590 4600 4610 4620 4630 4640 4650 4660 4670 4680 4690 4700 4710 4720 4730 4740 4750 4760 4770 4780 4790 4800 4810 4820 4830 4840 4850 4860 4870 4880 4890 4900 4910 4920 4930 4940 4950 4960 4970 4980 4990 5000 5010 5020 5030 5040 5050 5060 5070 5080 5090 5100 5110 5120 5130 5140 5150 5160 5170 5180 5190 5200 5210 5220 5230 5240 5250 5260 5270 5280 5290 5300 5310 5320 5330 5340 5350 5360 5370 5380 5390 5400 5410 5420 5430 5440 5450 5460 5470 5480 5490 5500 5510 5520 5530 5540 5550 5560 5570 5580 5590 5600 5610 5620 5630 5640 5650 5660 5670 5680 5690 5700 5710 5720 5730 5740 5750 5760 5770 5780 5790 5800 5810 5820 5830 5840 5850 5860 5870 5880 5890 5900 5910 5920 5930 5940 5950 5960 5970 5980 5990 6000 6010 6020 6030 6040 6050 6060 6070 6080 6090 6100 6110 6120 6130 6140 6150 6160 6170 6180 6190 6200 6210 6220 6230 6240 6250 6260 6270 6280 6290 6300 6310 6320 6330 6340 6350 6360 6370 6380 6390 6400 6410 6420 6430 6440 6450 6460 6470 6480 6490 6500 6510 6520 6530 6540 6550 6560 6570 6580 6590 6600 6610 6620 6630 6640 6650 6660 6670 6680 6690 6700 6710 6720 6730 6740 6750 6760 6770 6780 6790 6800 6810 6820 6830 6840 6850 6860 6870 6880 6890 6900 6910 6920 6930 6940 6950 6960 6970 6980 6990 7000 7010 7020 7030 7040 7050 7060 7070 7080 7090 7100 7110 7120 7130 7140 7150 7160 7170 7180 7190 7200 7210 7220 7230 7240 7250 7260 7270 7280 7290 7300 7310 7320 7330 7340 7350 7360 7370 7380 7390 7400 7410 7420 7430 7440 7450 7460 7470 7480 7490 7500 7510 7520 7530 7540 7550 7560 7570 7580 7590 7600 7610 7620 7630 7640 7650 7660 7670 7680 7690 7700 7710 7720 7730 7740 7750 7760 7770 7780 7790 7800 7810 7820 7830 7840 7850 7860 7870 7880 7890 7900 7910 7920 7930 7940 7950 7960 7970 7980 7990 8000 8010 8020 8030 8040 8050 8060 8070 8080 8090 8100 8110 8120 8130 8140 8150 8160 8170 8180 8190 8200 8210 8220 8230 8240 8250 8260 8270 8280 8290 8300 8310 8320 83
```

```

0100 :FACRIT.M65
0101 :BY PATRICK DELL'ERA
0102 :ANTIC MAGAZINE
0104 :
0105 PROGRAM = 9300
0106 BUFFER = 52007
0107 :External reference equates
0108 L01:105 = BUFFER+2
0109 L01:106 = BUFFER+3
0110 L01:091 = BUFFER+4
0111 L01:064 = BUFFER+900
0112 L01:121 = BUFFER+900
0113 L01:125 = BUFFER+90E
0114 L01:127 = BUFFER+916
0115 L01:000 = BUFFER+921
0116 L01:107 = BUFFER+922
0117 L01:003 = BUFFER+923
0118 L01:070 = BUFFER+924
0119 :End of external references
0120 :
0121 :System equates used
0122 0001 = 509
0123 005VEC = 50A
0124 RTCLOCK = 512
0125 SOUNDH = 541
0126 ATTRACT = 540
0127 SAVMS5C = 550
0128 50L5TL = 50230
0129 50L5TH = 50231
0130 COL05T = 50244
0131 RUADAR0 = 502E0
0132 COL0R0 = 502C4
0133 COL0R1 = 502C5
0134 COL0R2 = 502C6
0135 COL0R4 = 502C0
0136 ICC0M4 = 50342
0137 IC0AL = 50344
0138 IC0AR = 50345
0139 IC0LL = 50340
0140 IC0LH = 50349
0141 IC0AL = 5034A
0142 IC0A2 = 5034A
0143 COM50L = 50B0F
0144 RAND0M = 5020A
0145 CIOV = 5045E
0146 EOL = 900
0147 :End of system equates
0148 :Zero-page equates
0149 PIC.CIR = 5E0
0150 009 = 5E0

```

```

0151 CTR1 = 00A
0152 CTR2 = 00B
0153 SUCDLR = 0CC
0154 PICTYPE = 0C0
0155 N16 = 0EC
0156 N17 = 0E6
0157 N18 = 0E4
0158 N19 = 0E1
0159 N22 = 0E3
0160 N23 = 0E8
0161 N24 = 0E2
0162 N27 = 0E9
0163 N41 = 00B
0164 N42 = 001
0165 N54 = 002
0166 N55 = 003
0167 N59 = 004
0168 N60 = 005
0169 ; End of zero-page equates
0170 .PAGE "Main Program 11/18/84"
"
0171 ;
0172 ; Program Start
0173 ; First two bytes are variables
0174 ; indicating the Pause length
0175 ; and the Drive # pictures are
0176 ; read from.
0177 ;
0178 == PROGRAM
0179 WAIT
0180 .BYTE 2
0181 DRNUM
0182 .BYTE '1'
0183 ;
0184 ; Routine to load compressed
0185 ; files.
0186 ;
0187 READ.HDR
0188 INC PIC.CTR
0189 JMP GET.BYTE
0190 PIC.LDR
0191 LDA #0FF
0192 STA PIC.CTR
0193 LBL:007
0194 JSR READ.HDR
0195 LDX PIC.CTR
0196 CPX #01A
0197 BEQ LBL:006
0198 CPX #00D
0199 BEQ SUCDLR.PIC
0200 CPX #?
0201 BNE LBL:007
0202 STA N09
0203 JMP LBL:007
0204 SUCDLR.PIC
0205 STA SUCDLR+1
0206 JSR READ.HDR
0207 STA SUCDLR+2
0208 JSR READ.HDR
0209 STA SUCDLR+3
0210 JSR READ.HDR
0211 STA SUCDLR+4
0212 JSR READ.HDR
0213 STA SUCDLR
0214 JMP LBL:007
0215 LBL:006 LDA #0
0216 STA N16
0217 STA N17
0218 LDA SAVMSC
0219 STA PIC.CTR
0220 STA N18
0221 LDA SAVMSC+1
0222 STA PIC.CTR+1
0223 STA N18+1
0224 LBL:030 JSR GET.BYTE
0225 PHA
0226 LDX #0
0227 STX N22
0228 AND #00B
0229 STA N23
0230 PLA
0231 AND #07F
0232 STA N24
0233 BNE LBL:025
0234 JSR GET.BYTE
0235 STA N22
0236 JSR GET.BYTE
0237 STA N24
0238 LBL:025 DEC N24
0239 LDA N23
0240 BNE LBL:026
0241 JSR GET.BYTE
0242 STA N27
0243 LBL:029
0244 JMP LBL:020
0245 LBL:032 DEC N24
0246 LDA #0FF
0247 CMP N24
0248 BNE LBL:029
0249 DEC N22
0250 LDA #0FF
0251 CMP N22
0252 BNE LBL:029
0253 BEQ LBL:030
0254 LBL:036 DEC N24
0255 LDA #0FF
0256 CMP N24
0257 BNE LBL:026
0258 DEC N22
0259 LDA #0FF
0260 CMP N22
0261 BEQ LBL:030
0262 LBL:026 JSR GET.BYTE
0263 STA N27
0264 LBL:028 LDA #2
0265 CMP N09
0266 BEQ LBL:031
0267 LBL:035 BEQ LBL:032
0268 LDA N27
0269 LDY #0
0270 STA (PIC.CTR),Y
0271 CLC
0272 LDA #050
0273 ADC PIC.CTR
0274 STA PIC.CTR
0275 LDA #0
0276 ADC PIC.CTR+1
0277 STA PIC.CTR+1
0278 INC N17
0279 LDA #060
0280 CMP N17
0281 BNE LBL:033
0282 LDA #1
0283 CMP N16
0284 BNE LBL:034
0285 CLC
0286 LDA #1
0287 ADC N18
0288 STA N18
0289 STA PIC.CTR
0290 LDA #0
0291 STA N16
0292 STA N17
0293 ADC N18+1
0294 STA N18+1
0295 STA PIC.CTR+1
0296 JMP LBL:033
0297 LBL:034 INC N16
0298 CLC
0299 LDA #028
0300 ADC N18
0301 STA PIC.CTR
0302 LDA #0
0303 STA N17

```

```

0304 ADC M10+1
0305 STA PIC.CTR+1
0306 LBL:033 L0A M23
0307 BEQ LBL:035
0308 LBL:037 BNE LBL:036
0309 LBL:031 L0A M27
0310 LOY M0
0311 STA (PIC.CTR).Y
0312 INC PIC.CTR
0313 BNE LBL:031.1
0314 INC PIC.CTR+1
0315 LBL:031.1
0316 L0A M23
0317 BEQ LBL:035 ;Forced branch
0318 BNE LBL:037 ;
0319 ;
0320 ;CIO Utilities
0321 ;
0322 GET.0YTE
0323 L0X M310
0324 L0A M0
0325 STA ICBL.LX
0326 STA ICBL.HX
0327 JSR CIOV
0328 BMI LBL:030
0329 RTS
0330 LBL:030 PLA
0331 PLA
0332 JMP MIC.1
0333 CLOSE.CH1
0334 L0X M310
0335 CLOSE.CH6
0336 L0A M30C
0337 STA ICCOM.X
0338 JMP CIOV
0339 OPEN.1
0340 STA ICBAH.X
0341 TYA
0342 STA ICBAL.X
0343 L0A M3
0344 STA ICCOM.X
0345 LBL:040 JSR CIOV
0346 BMT EXIT
0347 RTS
0348 EXIT JSR CLOSE.CH1
0349 JMP (005VEC)
0350 ;
0351 ;Picture fader routine
0352 ;
0353 MSKTBL
0354 .0YTE 001,000,040,002
0355 .0YTE 510,000,004,020
0356 FADIN
0357 L0A SAVMSC
0358 STA M41
0359 STA M54
0360 L0A M0
0361 STA CTR2
0362 LBL:104 L0A M7
0363 CMP CTR2
0364 BC5 LBL:007
0365 RTS
0366 LBL:007 L0X CTR2
0367 L0A M0
0368 STA LBL:000
0369 LBL:090 L0A M5FE
0370 CMP LBL:000
0371 BCC LBL:000
0372 THA
0373 PHA
0374 L0X LBL:000
0375 LOY LBL:070.X
0376 PLA
0377 TAN
0378 JSR LBL:009
0379 INC LBL:000
0380 JMP LBL:090

```

```

0301 LBL:000 THA
0302 PHA
0303 L0X M5FF
0304 LOY LBL:070.X
0305 PLA
0306 TAN
0307 JSR LBL:009
0308 L0A LBL:091
0309 BMT LBL:092
0310 LOY CTR2
0311 CPY M2
0312 BNE LBL:093
0313 L0A SVCCLR-1.Y
0314 STA COLOR0
0315 LBL:093
0316 CPY M3
0317 BNE LBL:096
0318 L0A SVCCLR-1.Y
0319 STA COLOR1
0320 LBL:096
0321 CPY M4
0322 BNE LBL:099
0323 L0A SVCCLR-1.Y
0324 STA COLOR2
0325 LBL:099
0326 CPY M5
0327 BNE LBL:092
0328 L0A SVCCLR
0329 STA COLOR4
0330 LBL:092 INC CTR2
0331 JMP LBL:104
0332 LBL:089
0333 L0A LBL:105
0334 STA M42
0335 L0A LBL:106
0336 STA M55
0337 L0A M0
0338 STA LBL:107
0339 LBL:113 L0A M510
0340 CMP LBL:107
0341 BCS LBL:100
0342 RTS
0343 LBL:100 L0A (M41).Y
0344 AND MSKTBL.X
0345 BNE LBL:111
0346 L0A MSKTBL.X
0347 EOR M5FF
0348 AND (M54).Y
0349 JMP LBL:112
0350 LBL:111 ORA (M54).Y
0351 LBL:112 STA (M54).Y
0352 INC M42
0353 INC M55
0354 INX
0355 THA
0356 AND M7
0357 TAN
0358 INC LBL:107
0359 JMP LBL:113
0360 ;
0361 ;Program Entry
0362 ;
0363 START
0364 L0A ORNUM ;User alterable
0365 STA 00VC+1 ;drive #
0366 L0X M1 ;Tells system
0367 STX 000T ;no Coldstart
0368 STX PICTYPE ;and initializes
0369 ORX
0370 STX COL0ST
0371 STX SOUNDOR ;No disk sound
0372 ;
0373 ;Build random Table for fading
0374 ;Picture.
0375 ;

```

continued on next page


```

0456 LBL:079 THA
0457 STA LBL:07B.X
0458 IOX
0459 ONE LBL:079
0460 STX LBL:080
0461 LBL:081
0462 LDA #5FF
0463 STA #00
0464 EDR LBL:080
0465 PHA
0466 STA #59
0467 LBL:062 ASL A
0468 BCS LBL:061
0469 LSR #00
0470 JMP LBL:062
0471 LBL:061 LDA RABDDH
0472 AND #00
0473 CMP #59
0474 BEQ LBL:063
0475 BCS LBL:061
0476 LBL:063
0477 STA LBL:083
0478 TAN
0479 LDA LBL:07B.X
0480 TAY
0481 PLA
0482 PHA
0483 TAN
0484 LDA LBL:07B.X
0485 LDH LBL:083
0486 STA LBL:07B.X
0487 PLA
0488 TAN
0489 TYA
0490 STA LBL:07B.X
0491 INC LBL:080
0492 INC PICTYPE
0493 ONE LBL:081
0494 :
0495 :Build screen display list by
0496 :closing channel 6
0497 :
0498 LDH #560
0499 JSR CLDSE.CH6
0500 :
0501 :Then open GRAPHICS 0+16
0502 :
0503 LDA #00C
0504 STA ICAH1.X
0505 LDA #0
0506 STA ICAH2.X
0507 LDY # <SDVC
0508 LDA # >SDVC
0509 JSR DPE0.1
0510 :
0511 :Give screen some color and
0512 :modify display list to
0513 :ANTIC E (GRAPHICS 7+) display
0514 :list
0515 :
0516 LDA #588
0517 STA CBLDR4
0518 LDA SBL5TL
0519 STA #41
0520 LDA SBL5TH
0521 STA #42
0522 LDY #3
0523 LDA #54E
0524 STA (0413).Y
0525 LDY #6
0526 LBL:071 LDA #98E
0527 STA (0413).Y
0528 IOY
0529 CPY #563
0530 ONE LBL:071
0531 LDA #54E
0532 STA (0413).Y
0533 IOY
0534 IOY
0535 IOY
0536 LBL:073 LDA (H413).Y
0537 CMP #50F
0538 ONE LBL:072.A
0539 LDA #98E
0540 STA (H413).Y
0541 IOY
0542 ONE LBL:073
0543 :
0544 :Set pointers to a hidden
0545 :screen used to fade new
0546 :picture into old.
0547 :
0548 LBL:072.A
0549 STA LBL:186
0550 LDA SAVHSC+1
0551 STA LBL:106
0552 LDA LBL:106
0553 SEC
0554 SBC #520
0555 STA LBL:105
0556 LDA LBL:105
0557 STA SAVHSC+1
0558 :
0559 :Set CTR to point to first
0560 :picture.
0561 :
0562 FIRST.PIC LDA #1
0563 STA CTR1
0564 :
0565 :Open the disk directory for
0566 :reading.
0567 :
0568 WRT.PIC
0569 JSR CLDSE.CH1
0570 LDA #6
0571 STA ICAH1.X
0572 LDA #0
0573 STA ICAH2.X
0574 LDY # <DDVC
0575 LDA # >DDVC
0576 JSR DPE0.1
0577 STY CTR2 :Y=0 always...
0578 :
0579 :Read filenames 'til CTR2=CTR1.
0580 :CTR1 is index to which
0581 :picture was last shown.
0582 :
0583 LBL:119 LDA CTR1
0584 CMP CTR2
0585 BCC LBL:110
0586 LDH #510
0587 LDA # <LBL:064+1
0588 STA ICBL.X
0589 LDA # >LBL:064+1
0590 STA ICBAH.X
0591 LDA #20
0592 STA ICBL.LX
0593 LDA #0
0594 STA ICBLN.X
0595 LDA #5
0596 STA ICCDM.X
0597 JSR CIDV
0598 BHI FIRST.PIC
0599 IOC CTR2
0600 ONE LBL:119
0601 :
0602 :Have read the correct # of
0603 :filenames. Now check if
0604 :this is a FREE SECTORS message.
0605 :If yes, start from 1st picture.
0606 :
0607 LBL:110
0608 JSR CLDSE.CH1
0609 LDA LBL:121
0610 CMP #528

```

```

0611 BNE FIRST.PIC
0612 ;
0613 ;Stick "D1:" in front of
0614 ;filename.
0615 ;
0616 LDM #2
0617 NAME.LDDP LDA DOVC.N
0618 STA LBL:B64.N
0619 DEM
0620 RPL NAME.LDDP
0621 ;
0622 ;Then reform name with no
0623 ;spaces, a period, the extender.
0624 ;and an end-of-line.
0625 ;
0626 NAME.LDDP.1 INX
0627 CPX #8
0628 BED NAME.LDDP.2
0629 LDA LBL:125.N
0630 CMP #320
0631 BNE NAME.LDDP.1
0632 NAME.LDDP.2 LDY LBL:127
0633 LDA #'.
0634 STA LBL:125.N
0635 TYA
0636 INX
0637 STA LBL:125.N
0638 STA PICTYPE
0639 LDA #'I
0640 INX
0641 STA LBL:125.N
0642 LDA #'C
0643 INX
0644 STA LBL:125.N
0645 LDA #EOL
0646 INX
0647 STA LBL:125.N
0648 ;
0649 ;Open the picture for reading.
0650 ;
0651 JSR CLDSE.CH1
0652 LDA #4
0653 STA ICAN1.N
0654 LDA #0
0655 STA ICAN2.N
0656 LDY # <LBL:B64
0657 LDA # >LBL:B64
0658 JSR OPEN.1
0659 LDA LBL:105
0660 STA SAVMSC+1
0661 LDA #7
0662 LDM #310
0663 STA ICCDM.N
0664 ;
0665 ;If the extender is 'PIC' then
0666 ;go to compressed picture load
0667 ;routine.
0668 ;
0669 LDY PICTYPE
0670 CPY #'P
0671 BNE MIC
0672 JMP PIC.LDR
0673 ;
0674 ;Otherwise, do standard load.
0675 ;
0676 MIC
0677 LDA SAVMSC
0678 STA ICBAL.N
0679 LDA SAVMSC+1
0680 STA ICBAH.N
0681 LDA #0
0682 STA ICBLN.N
0683 LDA #310
0684 STA ICOLN.N
0685 JSR LBL:B40
0686 JSR GET.BYTE
0687 STA SUCCLR

```

```

0688 JSR GET.BYTE
0689 STA SUCCLR+1
0690 JSR GET.BYTE
0691 STA SUCCLR+2
0692 JSR GET.BYTE
0693 STA SUCCLR+3
0694 ;
0695 ;Both load types continue here.
0696 ;Fade new picture in. Pause
0697 ;and read console keys.
0698 ;
0699 MIC.1
0700 JSR FADEIN
0701 JSR CLDSE.CH1
0702 LDA #0
0703 STA ATTRACT
0704 STA RTCLKK+1
0705 LBL:134 LDA RTCLKK+1
0706 CMP WAIT
0707 BCS LBL:130
0708 LBL:132 LDA CDNSDL
0709 CMP #5
0710 BNE LBL:133
0711 JMP EXIT
0712 LBL:133 CMP #3
0713 BNE LBL:133.1
0714 LBL:133.2
0715 LDA #6
0716 LBL:133.3
0717 CMP CDNSDL
0718 BNE LBL:133.3
0719 LBL:133.1
0720 CMP #6
0721 BNE LBL:134
0722 LBL:130 INC CTR1
0723 JMP NXT.PIC
0724 DOVC
0725 .BYTE "D1:M.7IC".EOL
0726 SDVC
0727 .BYTE "S:".EOL
0728 M= RUNADR
0729 .WORD START
0730 .SET 1,M

```

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ARENA RACER

Article on page 49.

LISTING 1

```

GG 1 REM ARENA RACER
HP 2 REM BY J. SUTHERLAND
OK 3 REM ANTIC MAGAZINE
II 5 GOTO 1000
NU 10 SOUND 5,10,10,12:TM=TM-0.0+0.02*(15
-L):IF TM<0 THEN H=1:Y=60:SOUND 3,0,0
.01:GOTO 190
JG 15 A=USR(1536,ADR(S5)+70*Y+X):IF NOT
STRIG(0) THEN FOR T=1 TO 3:NEHT T:GOTO
10
LH 20 SOUND 3,0,0,0:5=STICK(0):IF 5=15 OR
5=05 THEN 40
YC 50 05=5:NYO=(5=13)+(5=9)+(5=5)-(5=14)-
(5=10)-(5=6):NHO=(5=7)+(5=6)+(5=5)-(5=
10)-(5=9)-(5=11)
OH 40 IF PEEK(207)<0 THEN P=PEEK(207):PO
KE 207,0:GOTO 80
SL 50 IF PEEK(5L+NHO+20*MYD)<65 THEN KD=
NHO:YO=MYO
CF 60 H=N+NO:Y=Y+YO
RO 70 GOTO 10
KV 80 05=15:IF P=65 THEN NHO=-HO:MYO=-YO:
H=N-KD:Y=Y-YD:GOTO 10
IE 90 IF P=153 THEN NHO=-KD:MYO=-YO:N=N-K
D:Y=Y-YD:GOTO 10
PO 100 IF P=154 THEN NHO=-HD:MYO=-YO:H=N-
NO:Y=Y-YD:GOTO 10
CJ 110 IF P=131 OR P=132 THEN 190
GM 120 IF P<200 THEN 10
SH 130 FOR J=100 TO 150:SOUND 1,J,10,12:N
EXT J:SOUND 1,0,0,0
SH 140 55(70*(Y+X)+9)=""*IG=6+15C=5C+2
5+2*ML:POSITION 2*G=1,16:Y *M:"":POSIT
ION 0,14:Y *M:SC:IF G<4 THEN 10
HO 150 FOR J=240 TO 125 STEP -0.5:SOUND 1
,J,10,14:SOUND 2,J+1,10,14:NEXT J:SOUN
D 1,0,0,0:5:SOUND 2,0,0,0
WZ 160 5C=5C+2*INT(TD):L=L+1:MEN=MEM+(BN>
33)-(MEN*10):ON=ON+1:IF ON=5 THEN ON=0
WU 170 IF L>14 THEN L=0:IF PEEK(1604)>4 T
HEN POKE 1604,PEEK(1604)-2
GL 180 GOSUB 1000:GOTO 10
IA 190 FOR J=9 TO 20:FOR C=9 TO 13:POKE 1
671,C:SOUND 0,200,0,20-J:A=USR(1536,AD
R(S5)+70*Y+X):NEXT C
OD 200 NEXT J:POKE 1671,2:POSITION MEN*2-
3*(MEN>1),10:Y *M:" "
YV 210 MEN=MEM-1:IF MEN<1 THEN 250
YA 220 SOUND 0,0,0,0:FOR T=1 TO 400:NEXT
T:TM=254
EK 230 55(70*(Y+X)+9)=""*IG:GOTO 10
UZ 240 GOTO 50
NW 250 POSITION 5,17:Y *M:Y *M:Y *M:POS
ITION 3,19:Y *M:Y *M:Y *M:POKE 4
0410,0:FOR J=0 TO 3
FY 260 SOUND J,0,0,0:NEXT J
UT 270 IF STRIG(0) THEN 270
UD 280 CLR :RUN
AH 1000 CLR :GRAPHICS 17:POSITION 4,3:Y *M
6:"ARENA "POSITION 9,5:Y *M:"by
":POSITION 4,7:Y *M:""
OE 1010 C=PEEK(106)-6:POKE 756,C:ML=153
6:POSITION 5,9:Y *M:"one moment":SETCO
LOR 2,9,4
ZO 1020 DIM T5(70),T25(70),55(49000)
HP 1030 T5=""*H0+C0+250-25*Y+Y0+""IT5(9)=
CHR5(C0):T5(15)=CHR5(C0+1):A=USR(ADR(T
5)):RESTORE 5000
UK 1040 READ A:IF A>-1 THEN POKE ML+K,A:K
=K+1:CM=CM+A:GOTO 1040
IF 1050 ML=PEEK(09)+256+PEEK(00)+3:5L=ML+
07:H0=INT(5L/256):L0=5L-H0*256:POKE 15
51,H0:POKE 1550,ML-H0*256
NO 1055 POKE 1667,H0:POKE 1666,L0:POKE 16
74,H0:POKE 1673,L0
DJ 1060 FOR J=0 TO 111:READ A:POKE C0+256
+J,A:NEXT J
DH 1070 MEN=4:L=0:ON=0
FI 1080 RESTORE 6000+L*20:READ T25:POSITI
ON 2,9:Y *M:Y *M:"ENTERING LEVEL ":L+1:G=0:
TM=254
LL 1090 55=""*FOR J=1 TO 70:A=ASC(T25(J,J
)):65:RESTORE 2000+A*10
JU 1100 READ T5:55(LEN(S5)+1)=T5:SOUND 0,
120,10,12:POSITION 1,11:Y *M:Y *M:" "
:5000,0,0,0:NEXT J
TP 1110 H=1:Y=60:HD=0:YO=0:NHO=0:MYD=0:Y
*M:"H"
IP 1120 RESTORE 6000+L*20+10:FOR J=1 TO 4
:READ A:155(A,A)=CHR5(200):NEXT J:POSITI
ON 1,14:Y *M:Y *M:"SCORE: ":5C
ER 1130 POSITION 1,10:IF MEN>1 THEN FOR J
=1 TO MEN-1:Y *M:Y *M:"NEXT J
UK 1140 POSITION 4,22:Y *M:Y *M:"LEVEL: ":L+1:
GOTO 10
V0 2000 DATA AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAA
IE 2010 DATA AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAA
DH 2020 DATA AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAA
PK 2030 DATA AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAA
JK 2040 DATA AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAA
CD 2050 DATA AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAA
RY 2060 DATA AAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAA
ER 2080 DATA 104,104,135,204,104,133,203
DV 2010 DATA 162,0,160,1
PM 2020 DATA 177,203,157,131,157
WR 2030 DATA 201,131,200,16,169,0,145,203
,136,177,203,201,65,240,4
05 2040 DATA 169,131,145,203,200
AL 2050 DATA 201,132,200,20,169,0,145,203
,232,200,192,15,240
SU 2060 DATA 51,177,203,201,65,240,4,169,
132,145,203
OD 2080 DATA 201,133,200,12,165,206,201,0
,208,6,200,169,132,145,203,136
IP 2090 DATA 201,134,200,12,165,206,201,0

```

```

,288.6,136,169,131,145,203,200
ZH 518B DATA 232,200,192,15,240
FD 5110 DATA 3,76,11,6,138,24
YM 5120 DATA 105,6,178,224,180,240,19
ZC 5130 DATA 165,283,24,233,185,144,2
FU 5140 DATA 230,284,165,203,24,185,70
IU 5150 DATA 133,283,76,9,6,173,218,157,1
33,207,169,2,141
NR 5160 DATA 210,157,169,0,133,77,230,206
,165,206,201,12,200,4,169,0,133,206,23
8,199,2,96,-1
ND 5170 DATA 0,0,0,0,0,0,0,255,255
SG 5180 DATA 255,255,255,255,255,255
FC 5190 DATA 60,24,189,231,231,189,24,60
GB 5200 DATA 8,8,0,85,42,8,8,0
GE 5210 DATA 0,0,0,85,42,0,0,0
TF 5220 DATA 192,96,240,159,104,240,96,19
2
NI 5230 DATA 3,6,31,249,29,15,6,3
PZ 5240 DATA 32,1,18,8,28,74,128,2
OS 5250 DATA 20,42,93,127,93,42,28,0
OD 5260 DATA 16,32,133,10,160,0,60,1
EW 5270 DATA 22,1,20,136,17,2,40,129
SV 5280 DATA 129,32,8,2,88,0,9,0
KH 5290 DATA 1,64,8,8,32,2,0
PP 5300 DATA 32,1,10,8,20,74,128,2
GL 6000 DATA AAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
OK 6010 DATA 672,1338,2075,3043
FJ 6020 DATA AAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
GP 6030 DATA 652,1290,2222,3113
TD 6040 DATA AAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
DL 6050 DATA 721,1025,3834,3169
MU 6060 DATA AAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
TM 6070 DATA 924,2042,3536,2129
RM 6080 DATA AAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

```

EE000EE000EE000F00EE000EE000EE000A
AAAA
JE 6090 DATA 764,1290,2222,3113
NI 6100 DATA AAAAAAAAAAFFFFF000FFFFF0
FFFFF0FFFFF0FFFFF0FFFFF0FFFFF0FFFFF0
AAAA
OF 6110 DATA 011,1324,4188,2914
SD 6120 DATA AAAAAAFFFFF000FFFFF000
00000000000000000000000000000000
AAAA
FD 6130 DATA 987,1115,3479,3194
GH 6140 DATA AAAAAA0000000000000000
00000000000000000000000000000000
AAAA
BZ 6150 DATA 512,1213,3314,501
MM 6160 DATA AAAAAA0000000000000000
00000000000000000000000000000000
AAAA
GY 6170 DATA 512,1131,3104,851
CD 6180 DATA AAAAAA0000000000000000
00000000000000000000000000000000
AAAA
JB 6190 DATA 513,1214,3104,851
FS 6200 DATA AAAAAA0000000000000000
00000000000000000000000000000000
50 6210 DATA 717,1115,3479,3104
JK 6220 DATA AAAAAA0000000000000000
00000000000000000000000000000000
FM 6230 DATA 907,1115,3759,3166
GC 6240 DATA AAAAAA0000000000000000
00000000000000000000000000000000
AAAA
LM 6250 DATA 502,1203,3314,521
OC 6260 DATA AAAAAA0000000000000000
00000000000000000000000000000000
AAAA
AD 6270 DATA 539,1582,2345,3199
KI 6280 DATA AAAAAA0000000000000000
00000000000000000000000000000000
AAAA
KD 6290 DATA 490,2639,2985,597

```

bonus game

rapid maze game in ACTION!

AMAZING

Article on page 55.

LISTING 1

```

: AMAZING
: BY DAVID PLOTKIN
: ANTIC MAGAZINE

```

MODULE

```

CARD SCRL0C=00,HIMEM=02E5,
PMLBASEADR,ADRES,ADRESB,SCORE={0}

```

```

INT DIRX={2},DIRY={0},MOIR,YDIR

```

```

INT ARRAY PKDR={0 0 0 0},
PYDR={0 0 0 0}

```

```

BYTE T=0A,UCDUNT=0D40B,
PMHITCLR=00B1E,DMACTL=02ZF,

```

```

GRCTL=00B1D,PM0A5E=0D407,
PRIORITY=026F,K0,Y0,COUNT={0},
LV={51,FT={1501},CO={20},
PCLRM=711,COLR0=70B,LOUD={0},
COLR1=709,COLR2=710,COLR4=712,
FATE=5377B,CURSH=752,
TXTRDW=65B,XTXCOL=657,LVL={11},
SND1=0D20F,SND2=0D20B

```

```

BYTE ARRAY YLOCL{00},
YLDCH{00},R5H2{160},
PMHPD5{0}=00000,
PX{41}={0 0 0 0},PY{41}={0 0 0 0},
BEGK{41}={0 52 52 196},

```

continued on next page

```

    BEGY(4)=(0 30 166 30),
    PM.WIDTH(5)=50000,PLPTR,
    PM.MISMA5K(4)=(5FC 5F3 5CF 53F),
    PCOLR(4)=704,PMTOP(0)=50000,
    PMTOP(0)=90000,PCOL(0),PCOL(0)
BYTE ARRAY BM(0)=(5C0 530 5C 93),
    CM(0)=(30 555 5AA 5FF),
    CHMP1(0)=(0 0 129 129 66 66 36 36
    24 24 24 24 36 36 66 66 129 129 0 0),
    CHMP2(0)=(0 0 129 129 66 66 60 36
    36 36 36 36 66 66 66 129 129 0 0),
    CRT(0)=(0 0 129 129 129 195 90 126
    126 165 165 126 126 90 195 129 129
    129 0 0),
    MSTATUS(0)=(0 0 0 0),ESTAT(4),
    MM(0)=(0 0 0 0),MY(0)=(0 0 0 0),
    DLK(0)=(('U'U'U'U'Z'W'Y'e'Z'W'Y'e'U
    'U'U'U')WIDTH=2,HEIGHT=8
BYTE ARRAY LINE,00M
BYTE LOW=LINE,HIGH=LINE+1

PROC OLAY(CARD WAIT)
CARD COUNT
FOR COUNT=0 TO WAIT 00 00 RETURN

PROC INIT7(0)
BYTE LOW1,HIGH1,I CARD SCREEN=LOW1
GRAPHICS(7) COLR0=44 COLR1=196
COLR2=106 COLR4=0 SCREEN=5CRLOC I=0
WHILE I<80 00 YLOC(I)=LOW1
YLOC(I)=HIGH1 SCREEN=SCREEN+48 I=I+1
00
I=0 WHILE I<160 00 R5K2(I)=I R5K 2
I=I+1
00
RETURN

INT FUNC M5TICK(BYTE PORT)
BYTE ARRAY PORTS(4)=527B
INT ARRAY VALUE(4)=(0 1 5FFFF 0)
RETURN (VALUE(PORTS(PORT)&C) R5K 2))

INT FUNC V5TICK(BYTE PORT)
BYTE ARRAY PORTS(4)=527B
INT ARRAY VALUE(4)=(0 1 5FFFF 0)
RETURN (VALUE(PORTS(PORT)&3))

PROC UPDATE(0)
TXTR0W=1 TXTCOL=12 PRINTC(5SCORE)
RETURN

PROC UPDATESHIP(0)
BYTE LOOPS
TXTR0W=1
FOR LOOPS=1 TO 5 00 TXTCOL=31+LOOPS
IF LV>=LOOPS THEN PRINT(" ")
ELSE PRINT(" ")
FI 00 RETURN

PROC DRAW7(BYTE X,Y,CLN)
BYTE M1=5A0,Y1=5A1,CLR1=5A2
LOW=YLOC(Y1)
HIGH=YLOC(Y1)
T=R5H2(X1)
LINE(T)=((BM(X1&5) 5FF)&LINE(T))&
    (BM(X1&5) &CM(CLR1)))
RETURN

PROC FASTDRAW(BYTE ARRAY PICTURE
    BYTE WIDTH,HEIGHT,KK,YY)
BYTE LCTR1,LCTR2 CARD LCTR3
FOR LCTR1=0 TO HEIGHT-1
00 LOW=YLOC(Y1+LCTR1) HIGH=YLOC(Y1+LCTR1)
LCTR2=KK+WIDTH
LCTR3=(LCTR1+1)*WIDTH-1
00
DO

LINE(LCTR2)=PICTURE(LCTR3)
LCTR3=-1 LCTR2=-1
UNTIL LCTR2=XX
00
00 RETURN

PROC PMGRAPHICS(0)
ZERO(CPMMP05,0)
ZERO(CPM-WIDTH,5)
DMACTL=33E PCOLR(0)=52
PM-BASEADR=(HIMEM-5000)&5F800
PMBASE=PM-BASEADR R5K 0
HIMEM=PM-BASEADR+760
PRIORITY=ASC0&17 GRACCTL=3
RETURN

CARD FUNC PMAOR(BYTE N)
IF N>=4 THEN N=0 ELSE N=-+1 FI
RETURN(CPM-BASEADR+760+(N*5100))

PROC PMCLEAR(BYTE N)
CARD CTR
BYTE ARRAY PLAYADR
PLAYADR=PMAOR(N)
IF N<4 THEN ZERO(PLAYADR,5100)
ELSE N=-4
FOR CTR=0 TO 5100-1
00 PLAYADR(CTR)=&PM-MISMA5K(N) 00
FI
RETURN

PROC WINDOW(0)
BYTE LOOPS
TXTR0W=0 TXTCOL=0 CUR5K=1
PRINT
("-----")
FOR LOOPS=1 TO 2 00
TXTR0W=LOOPS TXTCOL=0 PRINT("I")
TXTCOL=30 PRINT("I")
00 TXTR0W=3 TXTCOL=0
PRINT
("-----")
TXTR0W=1 TXTCOL=3 PRINT("SCORE: ")
UPDATE(0) TXTCOL=20 PRINT("MEM LEFT: ")
UPDATESHIP(0)
RETURN

PROC MOVEIT(BYTE ARRAY SHAPE BYTE
    WHICH,NUM,KK,YY)
ADRES=PMAOR(WHICH)+YY
MOVEBLOCK(ADRES,5,SHAPE,NUM)
PMMP05(WHICH)=XX
RETURN

PROC PUTMAN(0)
BYTE LP
FOR LP=0 TO 3 00
MSTATUS(LP)=0 ESTAT(LP)=0 00
K0=120 Y0=102 MOVEIT(CMMP1,0,20,K0,Y0)
FOR LP=1 TO 3 00
PX(LP)=BEGH(LP) PY(LP)=BEGY(LP)
MOVEIT(CRT,LP,20,PX(LP),PY(LP)) 00
RETURN

PROC BORDER(0)
BYTE L1,L2
FOR L1=0 TO 159 00
FOR L2=0 TO 3 00
DRAW7(L1,L2,1) DRAW7(L1,L2+76,1)
00 00
FOR L1=0 TO 79 00
FOR L2=0 TO 3 00
DRAW7(L2,1,1) DRAW7(L2+156,L1,1)
00 00
00
RETURN

PROC OUT5(0)

```

```

BYTE L1,L2
FOR L2=0 TO 72 STEP 16 00
  FOR L1=0 TO 156 STEP 8 00
    ORAH7(L1,L2,3) 00 00
  FOR L2=16 TO 72 STEP 16 00
    FOR L1=0 TO 156 STEP 16 00
      ORAH7(L1,L2,3) 00 00
    RETURN

PROC BOARDORAH()
BYTE L1,L2
ORORC()
FOR L1=2 TO 36 STEP 4 00
  FOR L2=12 TO 68 STEP 16 00
    FASTORAH(CLK,2,0,L1,L2)00 00
  OUT5()
  RETURN

PROC TESTCOL()
BYTE LL
FOR LL=0 TO 7 00
  PFCOL(LL)=0 PCOL(LL)=0 00
  00 UNTIL VCOUNT=120 00
  FOR LL=0 TO 7 00
    PFCOL(LL)=PMTOPFF(LL)
    PCOL(LL)=PMTOP(LL) 00
    PMHITCLR=1
  RETURN

BYTE FUNC PMHIT(BYTE N,CNUM)
IF N<4 THEN N==+4 ELSE N==+4 FI
IF CNUM<4 THEN
  RETURN((PCOL(N) RSH CNUM)81)
  ELSE CNUM==AS
  RETURN((PFCOL(N) RSH CNUM)81)
FI RETURN(0)

BYTE FUNC LLOC(BYTE XX,YY,CLR)
BYTE H1=5A0,Y1=5A1,CLR1=5A2,L1,L2
LOW=YLOCL(Y1) HIGH=YLOCH(Y1)
T=RSX2(H1) L1=X183
L2=LINE(T)80M(L1)
IF (L2&CH(CLR1))=(CH(L1)&CH(CLR1))THEN
  RETURN(1) FI: SOMETHING THERE
RETURN(0)

BYTE FUNC LKAND(INT H0,Y0 BYTE XX,YY)
BYTE HA,YA,H0,Y0,RS1,RS2
HA=HX-40 YA=(YY-32) R5X 1
IF H0>0 THEN HA==+7+H0 H0=HA
YA==+1 Y0=YA+7
ELSEIF H0<0 THEN HA==+H0 H0=HA
YA==+1 Y0=YA+7
ELSEIF Y0>0 THEN H0=HA+7
YA==+9 Y0=YA
ELSEIF Y0<0 THEN H0=HA+7 Y0=YA
ELSE RETURN(0)
FI RS1=LLOC(HA,YA,1) RS2=LLOC(H0,Y0,1)
IF RS1+RS2=0 THEN RETURN(1)
  ELSE RETURN(0):OK
FI RETURN(0):0LOCKEO

PROC NEWLEVEL()
BYTE LL
SNORST() SCORE==+COUNT*LVL
UPORATE() COUNT=0 LVL==+1
FOR LL=0 TO 7 00 PMLCLR(LL) 00
OUT5() PUTMAN()
DIRH=0 DIRY=0
IF LVL<11 THEN FT==+10 CO==+10 FI
RETURN

PROC HSLOROP(INT H0,Y0)
BYTE TRIG=644,HA,YA,LP,MA5K,L0={0},TT={0}
IF L0>1 THEN L0==+2 FI

```

```

SOUND(1,L0 L5K 3,10,L0)
IF TRIG=1 THEN TT=0 FI
IF TRIG=1 OR (H0=0 AND Y0=0) OR TT=1
  THEN RETURN FI
FOR LP=0 TO 3 00
  IF MSTATUS(LP)=0 THEN MSTATUS(LP)=1
  IF H0>0 THEN HA=H0 YA=Y0+9
  ELSEIF H0<0 THEN HA=H0+7 YA=Y0+9
  ELSEIF Y0>0 THEN HA=H0+4 YA=Y0
  ELSE HA=H0+4 YA=Y0+10
  FI MA5K=PM-HISMA5K(LP):$FF L0=12 TT=1
  MY(LP)=YA MH(LP)=HA
  PLPTR(MY(LP))=XMA5K
  PLPTR(MY(LP)+1)=XMA5K
  PMHPOS(LP+3)=MH(LP) EXIT
FI 00 RETURN

```

```

PROC HSLGET()
BYTE LP,L01={0}
IF L01>1 THEN L01==+2 FI
SOUND(2,L01 L5K 4,10,L01)
FOR LP=0 TO 3 00
  IF PMHIT(LP+4,0)=1 THEN
    MSTATUS(LP)=0 L01=12
    PLPTR(MY(LP))=APH-HISMA5K(LP)
    PLPTR(MY(LP)+1)=APH-HISMA5K(LP)
    PMHPOS(LP+4)=0 EXIT FI 00 RETURN

```

```

PROC GOTOBUMPED()
BYTE L0,L02={0},L01
IF L02>0 THEN L02==+1 FI
SOUND(3,L02 L5K 3,0,L02)
FOR L0=0 TO 3 00 FOR L01=1 TO 3 00
  IF PMHIT(L0+4,L01)=1 THEN
    L02=14 ESTAT(L01)=1 MSTATUS(L0)=0
    PLPTR(MY(L0))=APH-HISMA5K(L0)
    PLPTR(MY(L0)+1)=APH-HISMA5K(L0)
    PMHPOS(L0+4)=0
  FI 00 00
  FOR L01=1 TO 3 00
    IF ESTAT(L0)>0 THEN ESTAT(L0)==+1
    PCOL(L0)=FATE
  FI
  IF ESTAT(L0)=FT THEN ESTAT(L0)=0
  PMLCLR(L0)
  PCOLR(L0)=(RAND(15) L5K 4)+6
  PK(L0)=BEGH(L0) PY(L0)=BEGY(L0)
  MOVEIT(CRT,L0,20,PH(L0),PY(L0))
FI 00 RETURN

```

```

PROC MUNCH()
BYTE TIME=20,H1,Y1
IF LOU0>1 THEN LOU0==+2 FI
SOUND(0,0,LOU0 L5K 3,LOU0)
IF PMHIT(0,10)=0 THEN OLAY(1) RETURN FI
LOU0=12 H1=H0-40 Y1=(Y0-32) R5X 1
ORAH7(H1+5,Y1+4,0) ORAH7(H1+3,Y1+5,0)
ORAH7(H1+4,Y1+4,0) ORAH7(H1+4,Y1+5,0)
COUNT==+1
IF COUNT=135 THEN NEWLEVEL() FI
RETURN

```

```

PROC CHANGEORIR(BYTE MH)
BYTE F,LP
IF FATE<0 THEN F=RAND(4)
IF F=0 THEN PHOR(MH)=2 PYOR(MH)=0
  ELSEIF F=1 THEN PHOR(MH)=+2
  PYOR(MH)=0 ELSEIF F=2 THEN
    PHOR(MH)=0 PYOR(MH)=2 ELSE
    PHOR(MH)=0 PYOR(MH)=+2
  FI
  FI
  IF LKAND(PHOR(MH),PYOR(MH),PH(MH),
    PY(MH))=0 THEN PHOR(MH)=-PHOR(MH)

```

continued on next page

```
PYOR (WH) == PYOR (WH)
FI RETURN
```

```
PROC SMART5 (BYTE WHICH)
BYTE N,Y
N=PK(WHICH) Y=PY(WHICH)
IF (N=52 OR N=60 OR N=84 OR N=100
OR N=116 OR N=132 OR N=140 OR N=164
OR N=180 OR N=196) AND (Y=30 OR Y=70
OR Y=102 OR Y=134 OR Y=166) THEN
CHANGEOR(WHICH)
FI RETURN
```

```
PROC ENOGAME()
BYTE TRIG=644, ST=755, TIME=20
SCORE==+COUNT=LVL PMHITCLR=0 UPDATE()
COUNT=0 LVL=1 THROW=2 THYCOL=0
PRINT("GAME OVER *****")
DO ST=TIME RSH 41:1 UNTIL TRIG=0 DO
LV=5 UPDATESHIP()
SCORE=0 THROW=1 THYCOL=12
PRINT(" ") THROW=2 THYCOL=0
PRINT(" ")
UPDATE() OUTS() PUTMAN() FT=150 CO=20
NOIR=0 VOIR=0 OIRN=0 DIRV=0 ST=0
RETURN
```

```
PROC OUCK()
BYTE LC,LO
IF PCOL(4)=0 THEN RETURN FI
LC=Y0+10 LO=Y0+10
DO LO==+2 IF LO>200 THEN LO=200 FI
LC==+2 IF LC<30 THEN LC=30 FI
IF (LC=30 AND LO=200) THEN EXIT FI
SOUND(0,LC,0,0) SOUND(1,LO,0,0)
OUM(LC)=FATE OUM(LO)=FATE
OLAY(250) OLAY(250) OLAY(250)
DO SNORST()
FOR LC=0 TO 7 DO PMLCLR(LC) DO
LV==+1 UPDATESHIP()
```

```
IF LV=0 THEN ENOGAME() ELSE PUTMAN()
PMHITCLR=0 FI RETURN
```

```
PROC CHASE()
BYTE LP
FOR LP=1 TO 3 DO SMART5(LP)
PK(LP)=+PHOR(LP) PY(LP)=+PYOR(LP)
IF ESTAT(LP)=0 THEN
MOVEIT(CRT,LP,20,PK(LP),PY(LP)) FI
DO RETURN

PROC MOVEMAN()
BYTE STCK=632, TIME=20
NOIR=NSTICK(0) LSK 1
VOIR=VSTICK(0) LSK 1
IF NOIR<0 AND VOIR<0 THEN VOIR=0 FI
IF STCK=15 THEN NOIR=DIRN VOIR=DIRV FI
IF LKAND(HOIR,VOIR,N0,Y0)=1 THEN
N0==+HOIR
Y0==+VOIR OIRN=NOIR DIRV=VOIR ELSEIF
LKAND(OIRN,DIRV,N0,Y0)=1 THEN
N0==+DIRN Y0==+DIRV
ELSE DIRN=0 DIRV=0
FI MOVEIT(CHMP1,0,20,N0,Y0)
RETURN
```

```
PROC MAIN()
BYTE HN,COUNT, TIMER=20, ATRACT=540
SN01=3 SN02=0
INIT() PMGRAPHICS() PCLRM=50
PLPTR=PMADR(4) OUM=PMADR(0)
FOR HN=0 TO 7 DO PMLCLR(HN) DO
FOR HN=1 TO 3 DO
PCOLR(HN)=(RANO(15) LSK 4)+6 DO
HINDOW() BOARDRAW() PUTMAN() ENOGAME()
DO TESTCOL() MUNCK() MOVEMAN() OUCK()
HSLGET() CHASE() HSLOROP(OIRN,DIRV)
ATTRACT=0 GOTBUMPEO() DO
RETURN
```

communications

automatic log-on program

TSCOPE AUTODIALER

Article on page 13.

LISTING 1

```
GO 10 REM AUTODIAL.SYS
K2 20 REM BY CHARLES JACKSON
RH 30 REM ANTIC MAGAZINE
KL 40 GRAPHICS 0:POKE 710,100:POKE 709,12
FZ 50 DIM NUNS(15),ACNUNS(20),PWS(25)
XL 60 ? , "*****"
FJ 70 ? , "*****"
OK 80 ? 17 , "by C. Jackson"
SM 90 ? 17 ? "Phone number":INPUT NUNS
AK 100 ? 17 "Access Number":INPUT ACNUNS
WO 110 ? 17 "password":INPUT PWS:POKE 71
0,66
CO 120 ? 17 "Insert TSCOPE disk." ? "Press
N (START) to write AUTODIAL.SYS"
ZM 130 POKE 53279,0
VL 140 IF PEEK(53279) <> 6 THEN 140
```

```
OL 150 CLOSE #1:OPEN #1,0,0,"0:AUTODIAL.S
YS"
SL 160 ? #1:NUNS
EJ 170 ? #1:"C":ACNUNS
UN 180 ? #1:"":PWS
LP 190 CLOSE #1
PY 200 POKE 710,0: ? "AUTODIAL.SYS file c
reated." ?
MG 210 TRAP 250
CJ 220 OPEN #1,4,0,"0:TSCOPE.00J":CLOSE #
1
ND 230 ? "Remember to change the name of
your"
GP 240 ? "TSCOPE.00J file to AUTORUN.SYS.
"
OO 250 END
```

product reviews

GHOSTBUSTERS

Activision

2350 Bayshore Frontage Rd.

Mountain View, CA 94043

(415) 960-0410

\$29.95—48K disk

Reviewed by Harvey Bernstein

The marriage between hit movies and computer software has been a rocky one in the past. Games based on the cinema have rarely been commercially or artistically successful. That's usually because the game is produced as a rush-job to capitalize on the motion picture's success. Until now, that is...



Ghostbusters from Activision, is the first adaptation to capture both the feel and the theme of the movie on which it is based. For those one or two Antic readers who haven't seen the movie, I'll explain.

Supernatural phenomena (referred to in the game as PK levels) in YOUR town are on the rise and ghosts are everywhere. As the owner of the local Ghostbuster franchise, it is up to you to sweep the streets for mobile ghosts (Roamers), clean all haunted buildings of their inhabitants (Slimers), and finally face down the dreaded Marshmallow Monstrosity at the Temple of Zuul. Succeed, and fame and fortune are yours. Fail, and bankruptcy awaits.

Of course, no ghostbusters worth their salt can go into business without the proper equipment, and you have the option to buy Image Intensifiers, PK Energy Detectors, Ghost Traps, Bait, etc.

As a new franchisee, the bank supplies you with \$10,000 to start. But as you progress and earn more money, you can buy more sophisticated equipment. You can win at Ghostbusters by finishing the game with more money than you started. But sneaking two men into the Temple of Zuul will earn you a substantial bonus.

This is Activision's first attempt at a role-playing game, and while the game is enjoyable, there is a flaw in the design. At the end of a game, if you are successful, you are given an account number to correspond to your name and winnings. It is up to you to make a record of this number, and enter it again next time you want to play. Any deviation in the number or in spelling your character's name, and you must start over from the beginning. It should have been a simple matter to put in a save-game routine to simplify matters.

And then there's the music. While the adaptation of Ray Parker Jr.'s hit is well done, it plays throughout the game, over and over again. Since a typical game may last 15–20 minutes, a way to toggle the music off would be more than appreciated. As it is, I've taken to playing Ghostbusters with the monitor sound turned all the way down.

But these are just minor complaints. Ghostbusters is most enjoyable to play, and I hope it's a sign of what Atari owners can expect from Activision in the future.

SPY VS. SPY

First Star Software

22 E. 41 Street

New York, NY 10017

(212) 532-4666

\$29.95, 48K—disk

Reviewed by Harvey Bernstein

Too many products being released these days seem to be rehashes of the same tired arcade themes. So it gives

me great pleasure to announce that **Spy Vs. Spy** is one of the most original and clever games for Atari computers yet.

The Black and White secret agents, created by Cuban cartoonist Antonio Prohias, have been one of the most popular features in *Mad Magazine* since 1960. The game, with an excellent Atari adaptation by ace programmer Jim Nangano, not only remains faithful to the cartoons, but is challenging and great fun to play.

As the White spy, you race the clock and your opponent Black (controlled by either another player or the computer) to find 5 items hidden



within an embassy. Once you acquire the briefcase, secret plans, key, passport and money, you must find your way through a maze of rooms to the exit leading to the airport.

But that's not all! During play, you and your opponent leave traps for each other—bombs, electrified water, guns with strings attached to the trigger and so forth. Setting off one of these booby-traps puts you out of commission for several valuable seconds, giving your opponent the edge.

Of course, as a well-armed spy, you have an arsenal of remedies at your disposal. So the umbrella neutralizes the electrified water, the scissors saves you from the gun with the string, etc.

One of the most unique features of **Spy vs. Spy** is a technique First Star calls Simulvision. This splits the screen in half, so that the activities of

continued on next page

product reviews

White can be seen in the top half, and Black in the bottom, allowing each player to see what the other is up to. When a player enters a room already occupied, the action shifts to one half of the screen for a winner-take-all brawl.

I cannot recommend this game highly enough. The graphics and animation exploit all the possibilities of the Atari. And with several levels of play, *Spy vs. Spy* should provide loads of fun for both novices and experienced gamers.

MAC/65 TOOLKIT

Optimized Systems Software, Inc.
1221B Kentwood Ave.
San Jose, CA 95129
(408) 446-3099
\$39.95, 16K—disk,
requires MAC/65 Assembler

Reviewed by Andy Barton

The **MAC/65 Toolkit** is an impressive collection of some 67 macros (assembly language subroutines) for use with the **MAC/65 Assembler Editor**. These macros greatly enhance the speed and ease of assembly language programming for both the novice and the experienced programmer.

The Toolkit's macro calls mimic many BASIC and assembly language commands. This makes an assembly language program almost as easy as a BASIC program to write and debug.

The macros are grouped into three libraries (files). The first library is a collection of utility routines for graphics, math, I/O and program control.

The second library offers 11 macros for setting up single line resolution *Player/Missile* graphics, moving the players and missiles with a vertical blank interrupt, and detecting collisions.

The third library offers a VBI routine for vertical, horizontal, and diagonal line scrolling over a large

screen display using the joystick.

The Toolkit allows assembly language beginners to focus on overall programming without having to develop complicated routines. An elementary understanding (or handy reference book) of assembly language is necessary for using this kit. It is also desirable to have a moderate familiarity with Atari's P/M graphics. The user's manual is clear and concise, but it's not as helpful for newcomers as I would have liked.

The P/M graphics library needs a macro for joystick input. Writing one might be a good first project for the user. The joystick routine from the scroll library, while not directly transferable, is a good starting point.

The libraries use fairly large blocks of memory. The utility library itself occupies slightly over six pages (about 1 1/2K). The P/M graphics library occupies a little less than two pages and the scroll library just over one page of memory. If memory space becomes a problem, you can, with a bit of effort, go through the specific libraries deleting any unused macro before final assembly.

U. S. ADVENTURE

First Star Software
18 E. 41st Street
New York, NY 10017
(212) 532-4666
\$29.95—48K disk

Reviewed by Anita Malnig

This learning game might have some trouble competing with the latest Infocom adventure. However, **U. S. Adventure**—by Antic contributing editor Jerry White—could work very well in a history class, or be enjoyed by a youthful history buff. You've got to know your facts to succeed.

First you've got to know the order in which each state entered the union. There's a help key to give you clues, but each clue takes away points. You must move from state 1 to state 2, etc.,

by using directional signals which appear on the screen in the form of a compass.

After you've correctly guessed the state, you choose your next move from an Options Menu. From this menu you can choose *Time Travel*, *Take Event*, *Review Map* (here's where you get clues to the order of states), and several other less-used options.

Take Event and *Time Travel* test your knowledge of American history some more. You choose *Take Event* only after you have correctly chosen the next state's entrance. You're given several historical events and must weed out ones that may be bogus. Watch out for those! They can drastically alter your points.

Then you move to *Time Travel* to guess the year that the particular event took place. *Time Travel* offers nice computer sound and graphics as you appear to be looking through a long colorful tunnel. Years, 1776, 1821, etc., pass by and you control when to stop, advance, or go backward. You've got to correctly guess the date of an event with as little time travel as possible. (I hadn't read the instructions all the way through and got very intrigued with making those years go backward and forward through this tunnel ranging in hues from yellows to purples to blues. Well, I paid for the fun with my score!)

This learning game is full of interesting facts and proves to be a good history lesson. However, the instructions are not easy to follow and there are a lot of them. Getting from state to state seemed more convoluted than it had to be. I also found a spelling error: *Massachsettes*. That's really unacceptable in any piece of software, and especially in a learning game.

However, none of this is enough to turn thumbs down on the whole program. Young history buffs will enjoy **U. S. Adventure** and the game could certainly add a spark to any classroom history lesson.

product reviews

50 MISSION CRUSH

Strategic Simulations, Inc.
883 Stierlin Road, Building A-200
Mountain View, CA 94043
(415) 946-1200
40K—disk, requires BASIC
\$39.95

Reviewed by Karl Wiegner

50 Mission Crush puts you in the pilot's seat of a B-17 heavy bomber in World War II. Your goal is to survive 50 missions from an Air Force base in England against 23 targets in Nazi-occupied Europe.

Your opposition includes enemy fighters and flak guns, weather, your own inexperience, and the random number generator. This role-playing game lets you share the feelings of a real pilot—relief when a "milk run" target is selected by the computer, dismay when yet another fighter shoots holes in your damaged bomber, frustration when the target is protected by clouds, anxiety as you pray your fuel will last until you return to England.

You control the movement of the bomber as well as functions such as dropping bombs, changing altitude, and fighting fires. You direct the fire of your machine guns when fighters appear. And you watch helplessly as puffs of flak appear around the plane. The crew members become more effective at their jobs as they gain experience. Games and crews can be stored on disk for continuation at another time.

This is not a visually exciting game. The few animation sequences used are very simple. The game moves slowly in spots, possibly because it is written in BASIC. Combat sound effects are good, but more sound features would add to the game. The game is easy to learn and play. A typical mission takes 5 to 10 minutes of real time.

The strength of **50 Mission Crush** lies in its detailed simulation of com-

bat results. Damage accrues gradually and realistically. Consumption of fuel and ammunition require constant decision-making. I took more damage from flak than from enemy fighters, in contrast to the historical reality.

Unfortunately, there is not much of a learning curve with **50 Mission Crush**. Random events play a larger role in your fate than do skill and practice. This is a good operational-level war game, but don't expect a lot of exciting air combat action.

BEYOND CASTLE WOLFENSTEIN

Muse Software
347 N. Charles Street
Baltimore, MD 21201
(301) 659-7212
\$34.95, 32K—disk

Reviewed by Harvey Bernstein

When Muse Software introduced **Castle Wolfenstein** for the Apple in 1981, it quickly shot to the top of the charts and remained there as one of the most popular games for any microcomputer. The Atari translation was remarkably faithful to the Apple, right down to the lousy sound and black-white-green-purple graphics.

Now we have the sequel, **Beyond Castle Wolfenstein**, and while there have been some minor improvements, the game play doesn't provide nearly as much depth as the documentation suggests.

The scenario in the follow-up is different, yet similar enough to the original to allow the same spare graphics. As an allied intelligence agent, you must penetrate Der Führer's bunker, a 3-level maze of rooms. Hidden in a closet on the first level is a time bomb, which you must find and then set outside Hitler's office, two levels below, after which you must retrace your steps out before the whole place goes up.

As in the original, each room is

swarming with unfriendly guards. You have no uniform to allow you access, but you do have numbered passes. When you enter a room, the guard demands to see your pass. If you show the wrong one, you will probably be arrested, but you do have money to bribe the guards.

Once you find the correct pass for a level, it works with every guard on that level, so the game becomes a lot easier. The chests of the previous game have been replaced by closets, some of which are locked, requiring the talents of a safecracker.

There are some improvements over the original, most notably the speech synthesis used for the guards. With a

**The game promises more
than it delivers
in strategy.**

little practice, you can recognize their grunts as actual German words. Also, if you accidentally walk into a wall, you don't get the filling-rattling routine that accompanied **Castle Wolfenstein**.

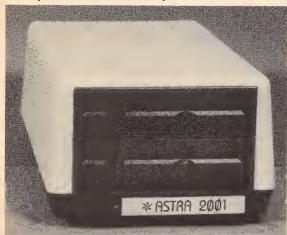
Now for the bad news. The game promises more than it delivers in strategy. For example, while I found keys in several closets, after playing 3 games in progressively difficult levels, I found nothing to use them on. Also, there is a toolkit which the documentation says can be used to disable the alarm system. Not only do I still not know how to disable the alarm, but I've yet to figure out why I would want to.

Once you know which passes to use, you can breeze through the game with only mapping needed. It's this sameness and ease that keeps me from going back to play **Beyond Castle Wolfenstein** again and again. Not to mention that it takes so long to load that it recalls fond memories of my old 410 recorder. **A**

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OPERATION: The "IMPOSSIBLE" consists of a disk program (unprotected so you can make as many backups as you wish) and a 4K STATIC RAM pack which is inserted into your computer (no soldering!) The "IMPOSSIBLE" will read your program disk and then **re-write it in an unprotected format!** You may make additional backup copies using a sector copier or even regular DOS! (Because your backup copy no longer has **BAD SECTORS** or **EXOTIC FORMATS**, the program data can now be manipulated into DOS compatible files (even double density), transferred to cassette, etc. (with the aid of our Satellite programs) No programming knowledge required. A few programs require logical thinking.

- FEATURES:**
1. Backup protected disks
 2. Handles most MULTILOAD programs
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 5. AFD-Automatic FLUZZY Sector Discriminator
 6. Expands computer memory to 52K usable
 7. Simple NO SOLDER installation
 8. Satellite expandable

PROJECTED SATELLITES: A "COMPACTOR" program which will convert your program into DOS compatible files (double density compatible) for the storage of several programs on one disk. A "COLUMN B" program for Word Processing, etc. It allows 80 columns on the screen! The "XL MATE" will allow programs made with your 400/800 "IMPOSSIBLE" to now play on your XL Computer! The **METAMORPHOSIS** is a program that will allow you to convert your **protected CASSETTES** into disk DOS files and vice-versa. All satellite programs must be used in conjunction with the "IMPOSSIBLE".

REQUIREMENTS: The "IMPOSSIBLE" diskette, the 4K STATIC RAM pack, a 400 or 800 computer (please specify) with 48K and "B" Rom's. **NOTE:** The very old Atari computers were shipped with "A" Rom's which had some serious "bugs". Even if you don't own an "IMPOSSIBLE", you should upgrade to "B" Rom's (simple to install) We have them available at a very inexpensive price. CALL US! "A" version available soon!

NOT A PIRATING TOOL: We at C.S.S. did not design THE "IMPOSSIBLE" to put Software Manufacturers out-of-business overnight! Nearly all of our products have been "tipped-off" by industry parasite who have little or no ability to develop a product of their own so we can sympathize with their dilemma. All C.S.S. products have built-in safety guards which prohibit their use for pirating! The "IMPOSSIBLE" is no exception! While the "IMPOSSIBLE" backup the most heavily protected programs, it also checks to see that the 4K STATIC RAM pack is installed before allowing the backup copy to execute!

EXAMPLES: The "IMPOSSIBLE" has been tested on 300 of the most popular and heavily protected programs we could find. With nearly 4000 programs for Atari, we DO NOT guarantee that it will backup all programs in the past-present-and-future! We will supply updates at \$6 each (non-profit!) if and when necessary. Programs we have successfully backed up include: Blue Max, Visi-Call, Archon, Mail, File Manager 800+, Syn Color, Syn File, One on One, 7 Cities of Gold, Super Bunny, Load Runner, Dial, and Gumball just to name a few!

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(game software)

Big Five Software
P.O. Box 9078-185
Van Nuys, CA 91409
(818) 782-6861
\$49.95
16K, cartridge

After more than a three year wait, Big Five Software has finally come up with Bounty Bob Strikes Back, the sequel to best selling Miner 2049ER. The game (on ROM cartridge) offers more of the same comic ladder action, a spectacular high-score screen, and a price tag of \$49.95. Jes' like the old days.

MASTERING YOUR ATARI THROUGH 8 BASIC PROJECTS

(book)

Prentice Hall
Englewood Cliffs, NJ 07632
(201) 592-2640
\$19.95 book and disk

Written by the editors and programmers of Micro Magazine, this package claims to teach all levels of programmers BASIC techniques, while providing programs with utility and enjoyment value. Projects include a spreadsheet, music player, games, and utilities.

U-PRINT A64

(interface/buffer)

Digital Devices Corp.
430 Tenth Street, Suite N205
Atlanta, GA 30318
(800) 554-4898
In Georgia (404) 872-4430
\$179.95-64K, \$119.95-16K
\$89.95—interface only

U-Print A replaces Digital's popular Ape-Face printer interface. The two higher-priced models also include memory buffers. A copy button for up to 255 multiple copies and reset button are built in.

SMARTMODEM 2400

(modem)

Hayes Microcomputer Products, Inc.
5923 Peachtree Industrial Blvd.
Norcross, GA 30092
(404) 449-8791
\$899 (estimated retail)



For some, 1200 baud is just not fast enough. The Smartmodem 2400 is the new Rolls Royce of modems. There may not yet be anyone out there fast enough to receive your signal, but this will look pretty nifty next to your Atari.

HOMEWRITER 10

(printer)

Epson America
2780 Lomita Boulevard
Torrance, CA 90505
(213) 539-9140
\$269 plus \$60 for interface

This new Epson 80-column, dot-matrix printer is aimed at the home market. It comes with plug-in ROM interface cartridges designed for specific printers. Epson claims their Homewriter operates in both draft and "near letter quality". Print changes (condensed, emphasized, etc.) can be chosen from a control panel. Optional add-ons include tractor feed and cut-sheet feeder.



PRINT SHOP

(graphics software)

Broderbund Software
17 Paul Drive
San Rafael, CA 94903
(415) 479-1170
\$44.95
48K disk

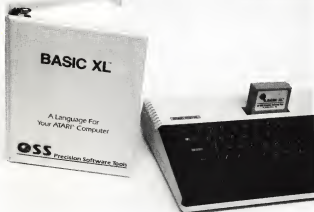
The long-awaited Atari version of the hit graphics design program has finally been pronounced ready by Broderbund. With Print Shop it's easy to make greeting cards, banners, signs, letterheads and custom stationery. Works with most of the popular dot-matrix printers.

Return the favor. When you call a manufacturer or supplier about a product you've seen advertised or otherwise mentioned in ANTIC, please tell them so. This will help us to continue to bring you the latest information about products that will make your Atari computer an even more valuable investment in the future. —ANTIC ED



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